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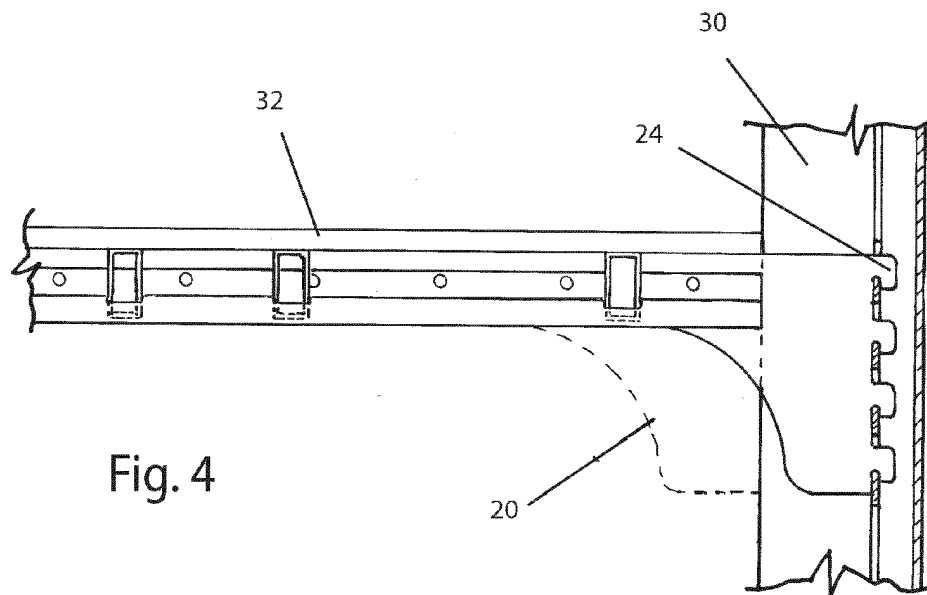
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(54) AN IMPROVED SHELVING POST AND ADJUSTABLE SHELVING SYSTEM

(57) The present invention relates to shelving posts for supporting shelf supports (32) or shelves wherein the shelving post incorporates a vertical post (30) and horizontal support (46) and wherein the vertical post (30) is comprised of two vertical members arranged in a spaced apart arrangement with two rib members that extend perpendicularly between the two vertical members. Apertures extend through the ribs so that shelf supports (32)

can be inserted into them to retain the shelf supports (32) or shelves. The invention also comprises an adjustable shelving system comprising shelving posts (30) and at least two shelf supports (32) that have a tall end that the majority of is kept out of sight by one of the two vertical members when in use, permitting the retailing of product directly below the shelf support (32) all the way to the shelving post.

**Fig. 4****EP 3 505 011 A1**

Description**TECHNICAL FIELD**

[0001] The invention relates to shelving posts utilised in adjustable shelving systems. More specifically the invention relates to improved shelving systems for displaying product in retail environments and in particular, supermarkets and other such stores.

BACKGROUND ART

[0002] Retail environments such as supermarkets employ shelving systems for displaying merchandise for sale. Due to the ever changing nature of products sold by stores, shelving systems employing adjustable shelving are the dominant and most common type of shelving systems used in this area. This is because a retailer may wish to reconfigure one or more sections of the shelves to accommodate products that would otherwise not fit in the pre-existing shelving fit out.

[0003] Adjustable shelves often are supported by a single pair of shelving posts which differentiate them from those shelving systems that incorporate four posts and rectangular shelves attached to all four posts. The utilisation of just a single pair of posts at the rear of the shelves allow for more unimpeded access to the products on the shelves.

[0004] However, the utilisation of a single pair of posts to support shelves brings with it a set of problems in how to support the shelves which may have to bear considerable amount of heavy products. For this reason, and others, the usual manner of constructing a shelving post is to utilise substantial rectangular hollow section (RHS) or square hollow section (SHS) steel members which have apertures cut into them for receiving connecting lugs of shelf supports that support the shelf surface. The shelf support arms used in many prior art systems have portions at their tall end that extend well below the level of the shelf that is being supported. As a result these shelf support arms prevent the placement of merchandise directly beneath them as shown in Fig. 1.

[0005] For retailers, who tend to line products up in lines extending from the front of the shelf right to the rear of the shelf, this means that there will be product lines at either ends of the shelf that can hold lesser quantities of product. More often than retailers leave a gap at each side of the shelf in front of the shelving posts or under the shelf support arms. Considering that a great number of shelving units are placed side by side, the loss of retail space along a supermarket aisle can be considerable.

[0006] It is an object of the present invention to produce a shelving post for utilisation within an adjustable shelving system that obviates or at least lessens the losses of retail space in front of the shelving posts and below the shelving supports.

DISCLOSURE OF INVENTION

[0007] In a preferred embodiment of the invention there is provided in a first aspect of the invention a shelving post for supporting shelves or shelf supports wherein the shelving post comprises:

- a vertical post wherein the vertical post is comprised of two planar vertical members orientated such that they are spaced apart and parallel and wherein the two planar vertical members are connected by at least one planar rib member that extends perpendicularly therebetween the two planar vertical members and wherein the at least one planar rib member has apertures formed in it for receiving one or more shelves or supports for shelves;
- a horizontal base support adapted to support the vertical post so that shelves or shelf supports can be inserted and retained on at least one side of the vertical post.

[0008] Preferably there are two planar rib members that extend perpendicularly between the two planar vertical members.

[0009] Still more preferably the two planar rib members have apertures formed in them and the horizontal base support is adapted to support shelves on both sides of the vertical post.

[0010] In a second aspect to the invention there is provided an adjustable shelving system, wherein the adjustable shelving system is comprised of:

- at least two shelving posts and at least two shelf supports used to support at least one shelf wherein the shelving post comprises:
 - a vertical post wherein the vertical post is comprised of two planar vertical members that are spaced apart and parallel and wherein the two planar vertical members are connected by at least one planar rib member that extends perpendicularly therebetween the two planar vertical members and wherein the at least one planar rib member has apertures formed in it for receiving one or more shelves or supports for shelves;
 - a horizontal base support adapted to support and connected to the vertical post.

[0011] Preferably the shelf supports have lugs at their tall end that are inserted into the vertical posts and wherein adjacent the lugs there is a stop such that when inserted into the vertical post, the stop abuts one of the two planar vertical members of the vertical post such that the planar vertical member of the vertical post provides support to the stop and therethrough, to the shelf support.

[0012] More preferably the stop is formed by the end of a reinforcing member which extends along and is connected to a side face of the shelf support.

[0013] More preferably the reinforcing member comprises a channel.

[0014] Still more preferably the channel is adapted to receive and retain shelf cross members which are located between two shelf supports which support the shelf surface.

[0015] Preferably the adjustable shelving system further comprises one or more braces that extend between the at least two shelving posts.

[0016] More preferably the one or more braces extend between the vertical posts or the horizontal base supports.

[0017] Still more preferably the one or more braces extend between the vertical posts and the horizontal base supports.

[0018] More preferably the system comprises at least three shelving posts for retaining between them, at least four shelf supports used to support at least two shelves, one between each pair of shelving posts, wherein the centre shelving post has inserted into one or more of its apertures the shelving supports from two adjacent shelves.

BRIEF DESCRIPTION OF THE DRAWINGS

[0019]

Fig. 1 is a cross section of a prior art shelving system shown with product situated on the shelves of the shelving system;

Fig. 2 is a perspective drawing of a prior art shelving system;

Fig. 3 is a side cutaway view of a prior art shelving system;

Fig. 4 is a side cutaway view of a shelving system according to a second aspect of the invention which depicts a shelf support and a shelving post according to the first aspect of the invention compared with the positioning of a shelf support as it would be located on a prior art shelving post;

Fig. 5 is a perspective view of a shelving system according to a first embodiment of the second aspect of the invention;

Fig. 6 is a perspective view of two adjacent stripped down shelving units depicted in Fig. 5;

Fig. 7 is a front view of a first embodiment of the first aspect of the invention being a shelving post;

Fig. 8 is a top view of the shelving post of Fig. 7;

Fig. 9 is a side view of the shelving post of Fig. 7;

Fig. 10 is a perspective view of the shelving post of Fig. 7

Fig. 11 is a cross section view of the shelving post of Fig. 7;

Fig. 12 is a front view of the horizontal support of shelving post of Fig. 7;

Fig. 13 is a perspective view of the shelving support that forms part of the second aspect of the invention;

Fig. 14 is a front view of the shelving support of Fig.

13;

Fig. 15 is a rear view of the shelving support of Fig. 13;

Fig. 16 is an exploded view of a second embodiment of the second aspect of the invention, being an adjustable shelving assembly;

Fig. 17 is a top view of the shelving support arm of Fig. 13;

Fig. 18 is a side view of the shelving support arm of Fig. 13;

Fig. 19 is a side view of a shelving post according to a second embodiment of the first aspect of the invention being a double sided shelving post;

Fig. 20 is a front view of the shelving post of Fig. 19;

Fig. 21 is an enlarged partial top view of the shelving post of Fig. 19;

Fig. 22 is a perspective view of the shelving post of Fig. 19;

Fig. 23 is a close up perspective view of the junction between the vertical post and horizontal support of the shelving post of Fig. 19;

Fig. 24 is a top view of the shelving post of Fig. 19;

Fig. 25 is a bottom view of the shelving post of Fig. 19;

Fig. 26 depicts the base of the shelving post at the junction between the footing and upright post along a cross section A-A of Fig. 24;

Fig. 27 is a cross section of the upright post of the shelving post of Fig. 19 taken along the line A-A;

Fig. 28 is front view of the footing member of the shelving post of Fig. 19;

Fig. 29 are cross sectional views of alternate embodiments to the first aspect of the invention being shelving posts;

Fig. 30 are cross sectional views of further alternate embodiments to the first aspect of the invention being shelving posts;

MODES FOR CARRYING OUT THE INVENTION

[0020] Fig. 1 to 3 depicts a prior art shelving system 10. The shelving system 10 suffers from the problems set out in the background to the invention. In particular, it features large posts 12 which retain horizontal supports 14 which in turn support shelves 16. Shelf supports have a plurality of lugs 24 which are supported in apertures 22 of the prior art shelving posts 12. So that the forces transferred to the post 12 by the shelf support 14 are spread out on the post, the shelf support end (hereafter the "tall end") which is inserted into the shelving post 12 is quite large in terms of its height when compared with the other end of the shelf support. However, having a shelf support that is very tall at its tall end prevents retailers from merchandising product 17 directly under prior art shelf supports 14 due to the vertical extent of shelf support 20 as shown in Fig.1. This can be contrasted with the shelving system depicted in Fig 4 where there is a shelving post 30 according to the present invention shown in a cutaway view connected to a shelving support 32. As can be seen

the shelf support 32 connects with apertures in the shelving post 30 towards the rear of the shelving post 30. This allows the majority of the vertical extent of the tall end of the shelving post to be hidden from view and also allows the merchandising of product right up to the post directly under the shelf support 32. This can be contrasted with how a shelf support 20 would be situated if used with a prior art post 12 where the shelf support 20 would be connected to the front face of the prior art shelving post (not shown).

[0021] Turning to Figs 5 and 6, these depict shelving system 40. The shelving system 40 is made of a number of components including shelving posts 30, side bumper 36 (under which there is a horizontal leg support) and front bumper 38, cross members 39, shelf supports 32 which support shelves 42 and shelf rear walls 44. Together the shelving system 40 represents an improved shelving system that allows merchandising of product using the full width of the shelf 42, unimpeded by either the shelving posts 30 or the shelf supports 32.

[0022] Turning to Figs 7 to 12 these all depict various aspects of shelving post 30. Shelving post 30 is comprised of horizontal base support 46 which supports the vertical post 48. Vertical post 48 is best shown in cross section in Fig. 11 where it can be seen that the post is comprised of two vertically extending members 50 that are planar and form the left and right sides of the vertical post 48. Extending between the two vertically extending members 50 are ribs 52 and 54. In the present embodiment of the post 30 which is a post for attaching shelves to a single side of the post, only rib 52 has apertures formed in them for the insertion of lugs 24 of shelf supports 32. In order to provide additional strength to the post 48, rivets or pins 58 extend between ribs 52 and 54 every 5 apertures 56 or thereabouts. The vertical post 48 is low profile in the sense that it is narrower than equivalent rated RHS or SHS prior art posts. In the present embodiment horizontal base member 46 comprises a RHS section however it should be appreciated by persons skilled in the art that other constructions can be employed instead of RHS. The horizontal support member 46 has formed within it a number connection points including bumper ports 66 for connecting the bumper 36 to the horizontal support member 46 and front bumper ports 68 for receiving and retaining portions of the front bumper 38. Side bumpers 36 are only used on the outermost horizontal support 46 in a plurality of joined shelving posts as shown in Figs. 5 and 6.

[0023] Depicted in Figs. 13 to 15 is a shelf support 32. Shelf support 32 has a planar portion 70 and a reinforcing member 72 which in the present embodiment is a channel. However, the skilled addressee will appreciate that other shaped reinforcing members can be utilised to provide greater resistance against deformation when in use. The reinforcing member 72 stops short of the tall end of the shelf support 32 such that when inserted into the vertical post 48, the planar face 78 abuts edge of vertical member 80 such that in use, weight on the shelf 42 caus-

es the planar face 78 to press against post 48 at point 80 which assists the shelf support 32 to resist the downward force created by the weight of the merchandised product sitting on the shelf 42. Turning to Fig. 16 channel 72 also has a further purpose of retaining shelf cross members 74 upon which the shelf surface 76 is attached (forming shelf 42). The shelf cross members 74 and shelf surface 76 brace the shelf support arms 32 providing additional rigidity to the shelving system 40. It should be noted that persons skilled in the art would appreciate that the shelving system 40 can incorporate many different types of shelves 42 including angled shelving where product slides or rolls (including those shelves that have small rollers) to the front of the shelf. Further the surface of the shelves may not be planar and may in fact be formed from wire or steel mesh or other materials or are otherwise adapted to have dividers and/or other retailing aids inserted or attached onto them.

[0024] Figs. 19 to 28 depicts double sided shelving post 82, a second embodiment of the shelving post. In contrast to shelving post 30 shelving post 82 has a horizontal support 84 that extends in both directions from its vertical post 86. Further, in the present embodiment horizontal support 84 comprises a flat bar base 90 and a vertically extending fin 92. Horizontal supports 84 also feature conduit apertures 94 for extending electrical and other services into the shelving system when in use. Horizontal supports 84 also feature fastening apertures 96 for securing the shelving post 82 to the floor or ground.

[0025] Vertical post 86 is best depicted in Figs. 21 and 27. The construction of vertical post 86 is almost the same as vertical post 48 in that it has two planar vertical members 98 extending in a spaced apart parallel manner, and two ribs 100 that extend between the two planar vertical members 98 in a spaced apart parallel manner. Fig. 27 also shows the use of rivet or pins 102 in the same manner as in the case of vertical post 48. Apertures 88 are formed in both ribs 100 as opposed to vertical post 48 where only rib 52 contained apertures for receiving the lugs 24 of shelf supports 32. Fin 92 is brought into contact with planar members 98 via steel connector 104 which is welded between fin 92 and planar members 98. This steel connector 104 transfers force from vertical post 86 to the horizontal supports 84 and particularly to fin 92, thereby increasing the loads of the shelving system 40. It should be noted that horizontal support 84 can be used instead of horizontal support 46 of the previous embodiment and vice versa. As in the case of horizontal support 46, side bumper 36 would be applied to the horizontal support 84 when in use as part of the shelving system 40.

[0026] Reference is now made to Fig. 29 which shows variations of the first and second embodiments of the shelving post, 48 and 86 respectively. Fig 29(a) and (b) are variations of shelving post 86 and (b) and (c) are variations of shelving post 48. In all variations the ribs 106 remain substantially the same with the length and thickness of the vertical members that flank them are varied. Fig 30 shows a further set of variations of a still

further embodiment of the shelving post. Shelving post 114 is comprised of two planar vertical members as in the case of vertical post 48 and 86. However instead of having two ribs formed between them, a single rib 110 extends perpendicularly between planar members 112. All other aspects of the shelving post 114 are the same as in the earlier embodiments, including using the horizontal support 46 or 84.

[0027] The above description describes the benefits of the shelving posts and shelving systems of the present invention. In particular that valuable merchandising space can be made available that would not otherwise be available using prior art shelving systems. Space is gained under the shelf supports by having low profile shelf supports that are thin with minimal vertical extent beyond the portion that would be obscured by the shelving post when in use together with putting the connection of the shelf supports to the post at the rear of the post and not the front as in the case of prior art shelving posts and shelving systems. These space savings provides great commercial benefits to retailers who can retail more product for a given footprint of the shelving system.

INDUSTRIAL APPLICABILITY

[0028] The present invention has industrial applicability in the field of retail display shelving for use in displaying and retailing goods including heavy goods.

Claims

1. A shelving post for supporting one or more shelves or shelf supports wherein the shelving post comprises:

- a vertical post wherein the vertical post is comprised of two planar vertical members that are spaced apart and parallel and wherein the two planar vertical members are connected by at least one planar rib member that extends perpendicularly therebetween the two planar vertical members and wherein the at least one planar rib member has apertures formed in it for receiving the one or more shelf supports or shelves;
- a horizontal base support adapted to support the vertical post so that shelves or shelf supports can be inserted and retained on at least one side of the vertical post.

2. The shelving post of claim 1 wherein there are at least two planar rib members that extend perpendicularly between the two planar vertical members.

3. The shelving post of claim 2 wherein the at least two planar rib members both have apertures formed in them for receiving the one or more shelves or shelf supports and wherein the horizontal base support is

adapted to support shelves on both sides of the vertical post.

4. The shelving post of claim 2 or 3 wherein the horizontal base support is formed from RHS or SHS sections.

5. The shelving post of claim 2 or 3 wherein the horizontal base support comprises a flat bar section with a fin extending perpendicularly from the flat bar section and wherein the fin extends between the two planar vertical members and wherein the fin and the two planar vertical members are connected.

6. An adjustable shelving system, wherein the adjustable shelving system is comprised of:

- at least two shelving posts and at least two shelf supports used to support at least one shelf wherein each shelving post comprises:

- a vertical post wherein the vertical post is comprised of two planar vertical members that are spaced apart and parallel and wherein the two planar vertical members are connected by at least one planar rib member that extends perpendicularly therebetween the two planar vertical members and wherein the at least one planar rib member has apertures formed in it for receiving one or more shelf supports or shelves;
- a horizontal base support adapted to support the vertical post.

7. The adjustable shelving system of claim 6 wherein the two planar vertical members are connected by two planar rib member that extends perpendicularly therebetween the two planar vertical members and wherein both rib member have apertures formed in them for receiving the one or more shelves or supports for shelves.

8. The adjustable shelving system of claim 7 wherein the shelf supports have lugs at their tall end that are inserted into the vertical posts and wherein adjacent the lug there is a stop such that when inserted into the vertical post, the stop abuts one of the two planar vertical members of the vertical post such that the planar vertical member of the vertical post provides support to the stop and therethrough, to the shelf support.

9. The adjustable shelving system of claim 8 wherein the shelf supports have a reinforcing member and the stop is formed by the end of the reinforcing member which extends along and is connected to a side face of the shelf support.

10. The adjustable shelving system of claim 9 wherein the reinforcing member is a channel.
11. The adjustable shelving system of claim 10 wherein the channel is adapted to receive shelf cross members that extend between a pair of shelf supports for supporting a shelf surface. 5
12. The adjustable shelving system of claim 11 wherein there are cross members that extend between the two shelving posts to provide rigidity to the adjustable shelving system. 10
13. The adjustable shelving system of claim 7 wherein the shelf support profile is tapered such that the majority of the tall end of the shelf support is hidden from view by the at least one of the planar vertical members. 15
14. The adjustable shelving system of any of claims 2 to 13 wherein product can be merchandised directly under the shelf supports in front of the shelving posts. 20

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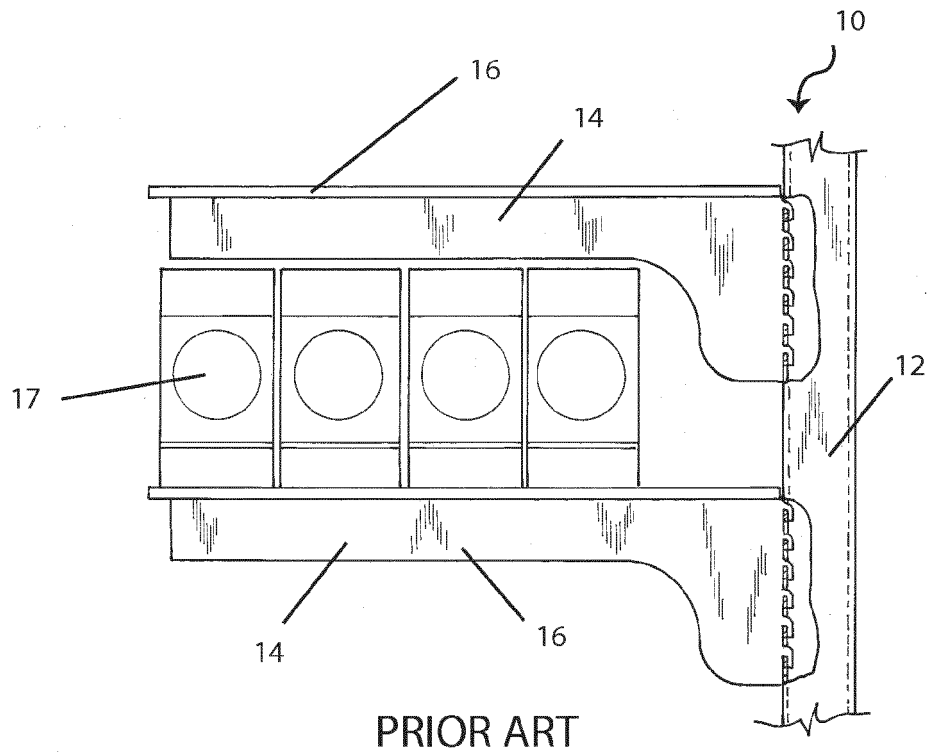
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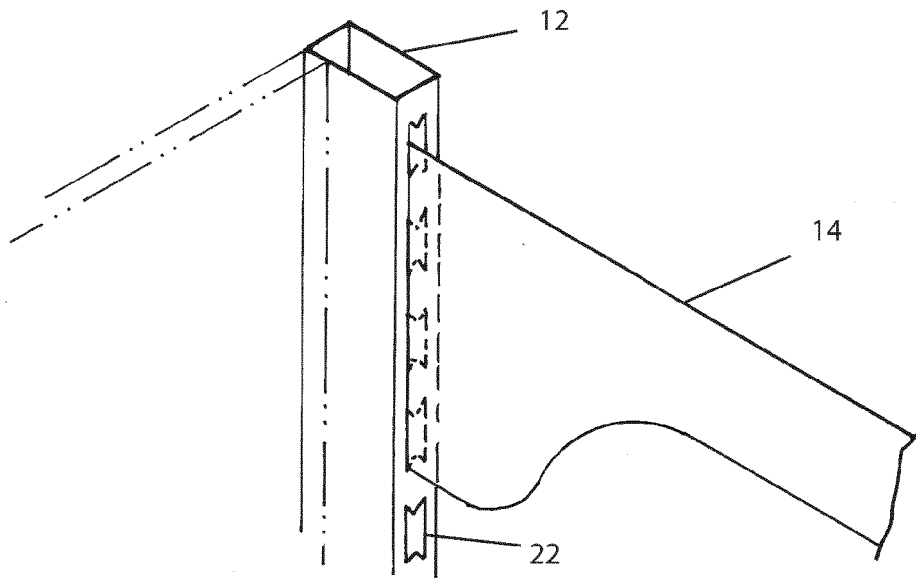
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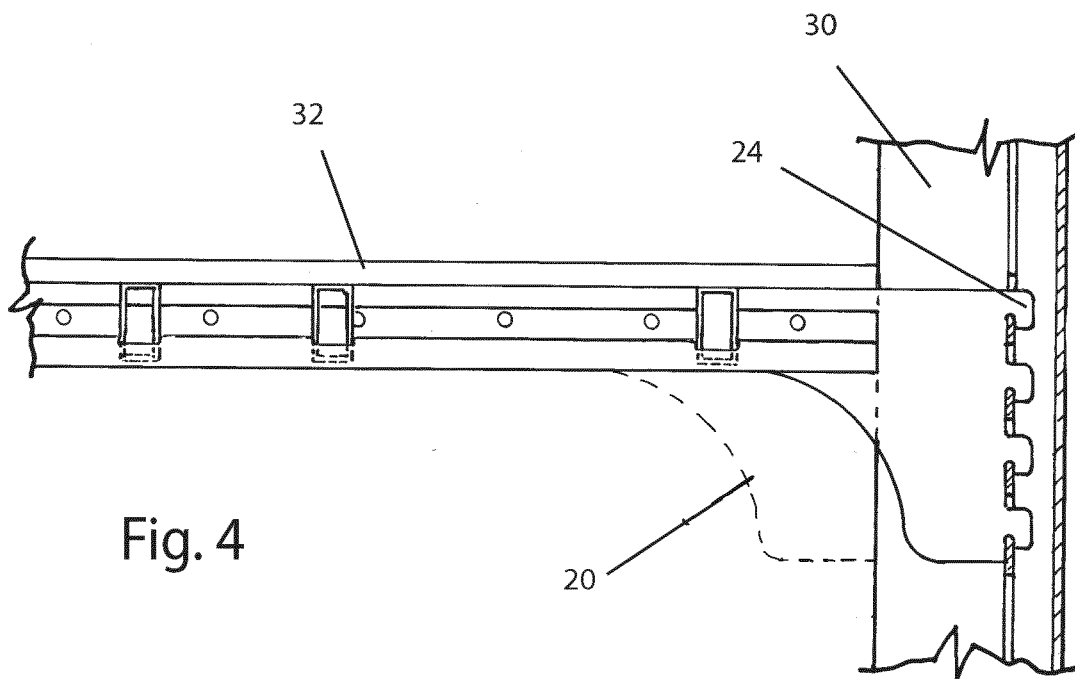
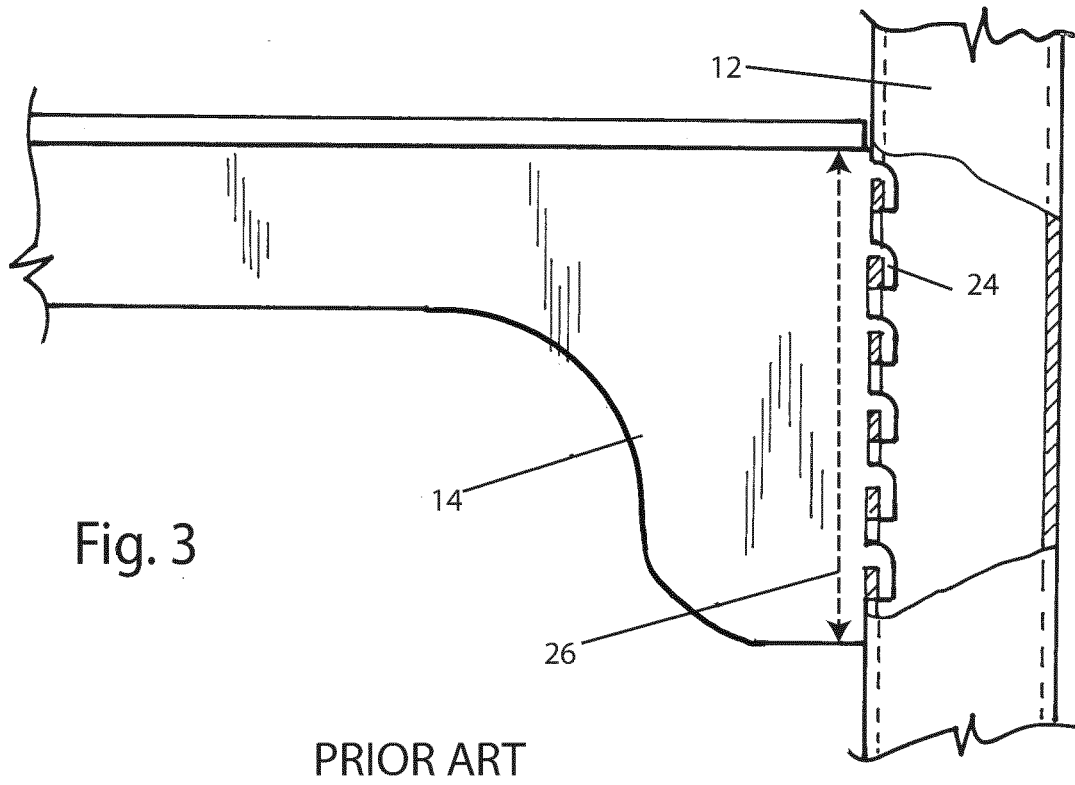
PRIOR ART

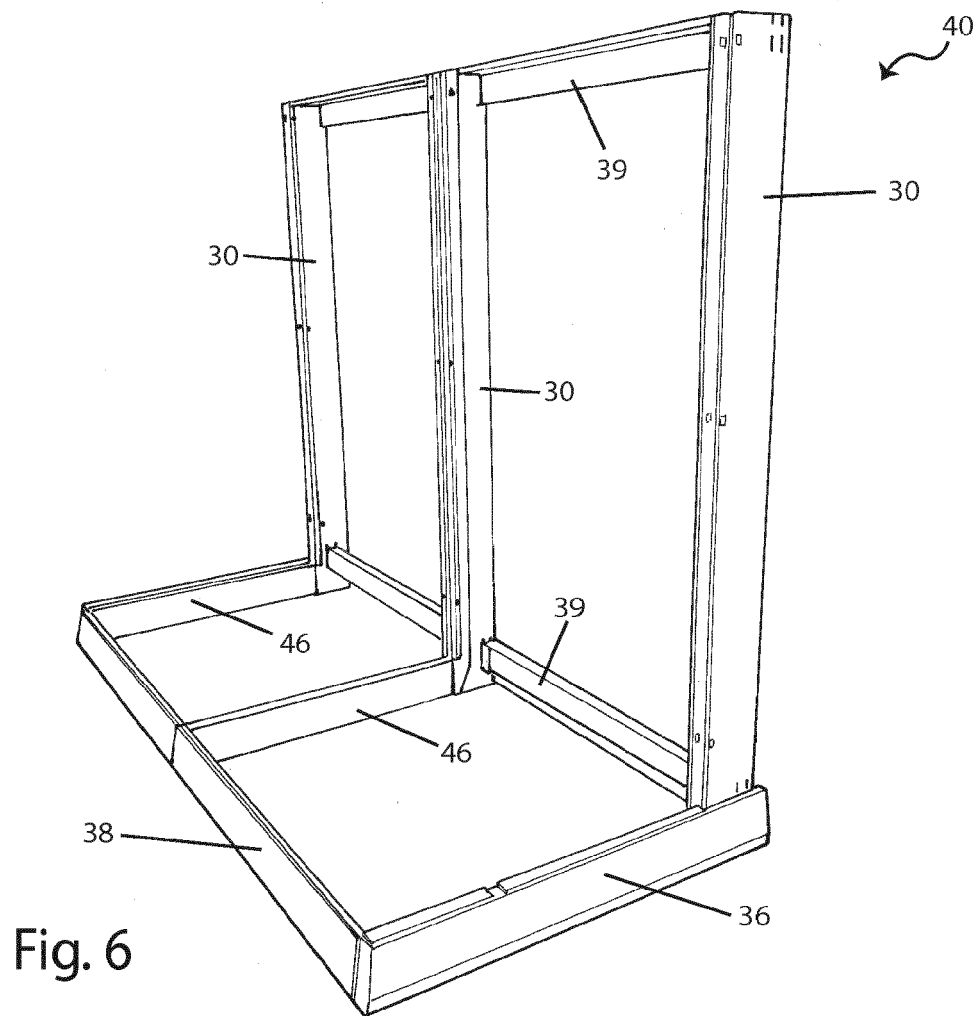
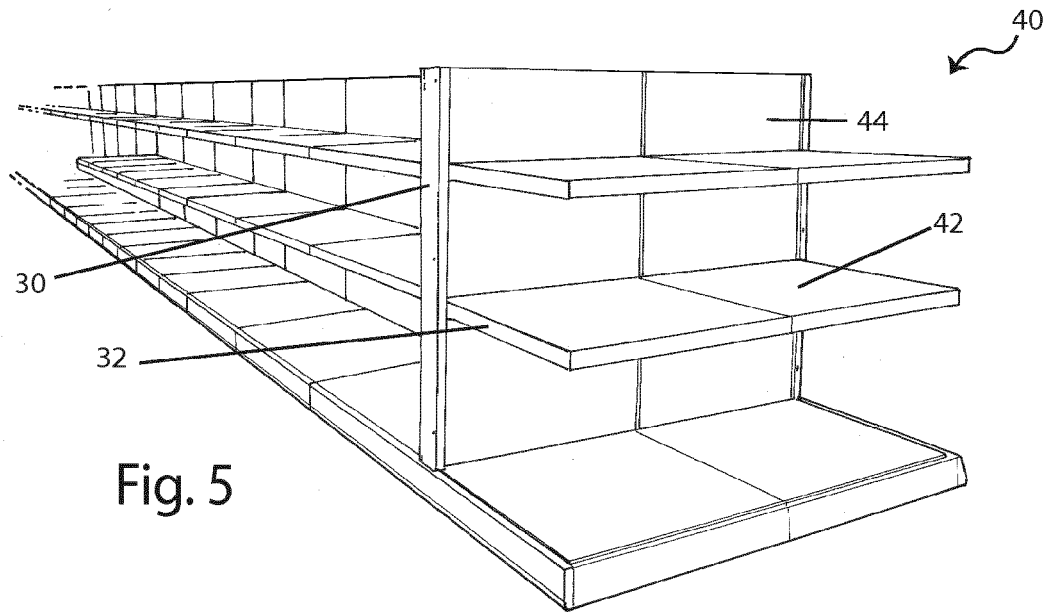
Fig. 1

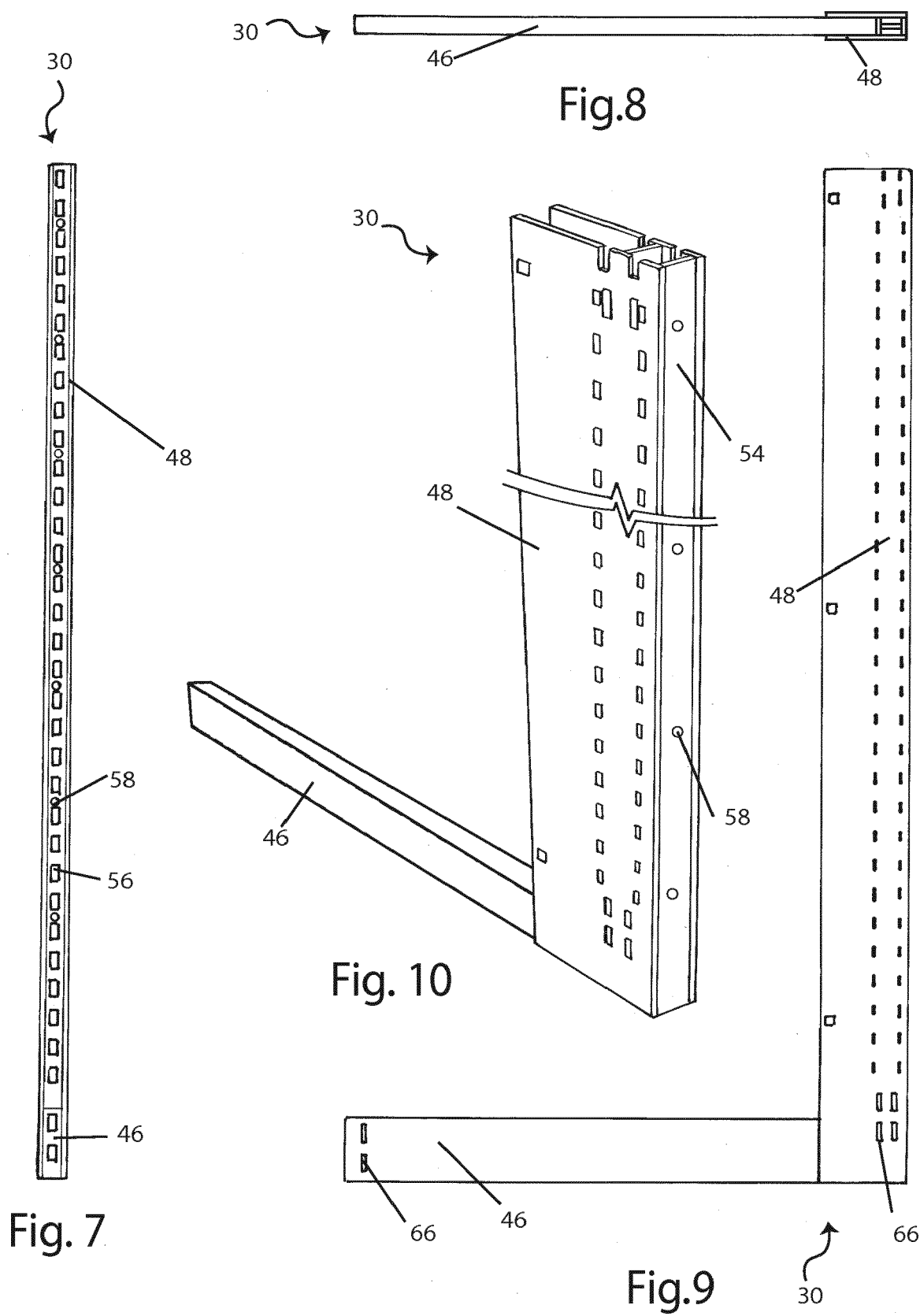


PRIOR ART

Fig. 2







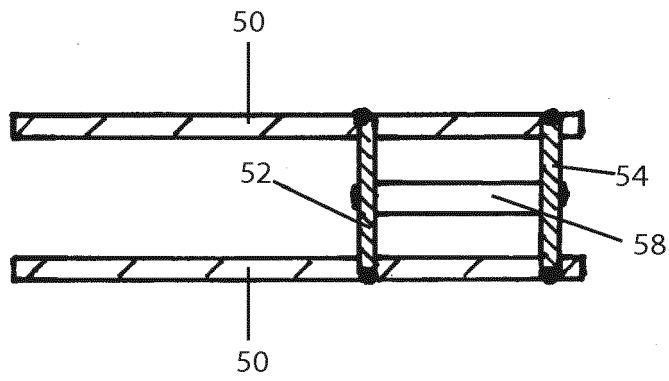


Fig. 11

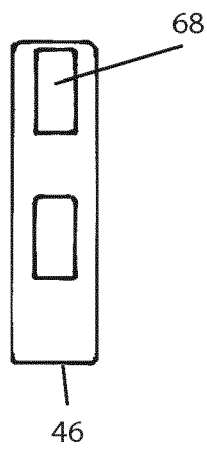


Fig. 12

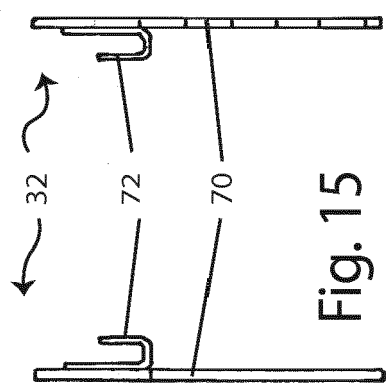
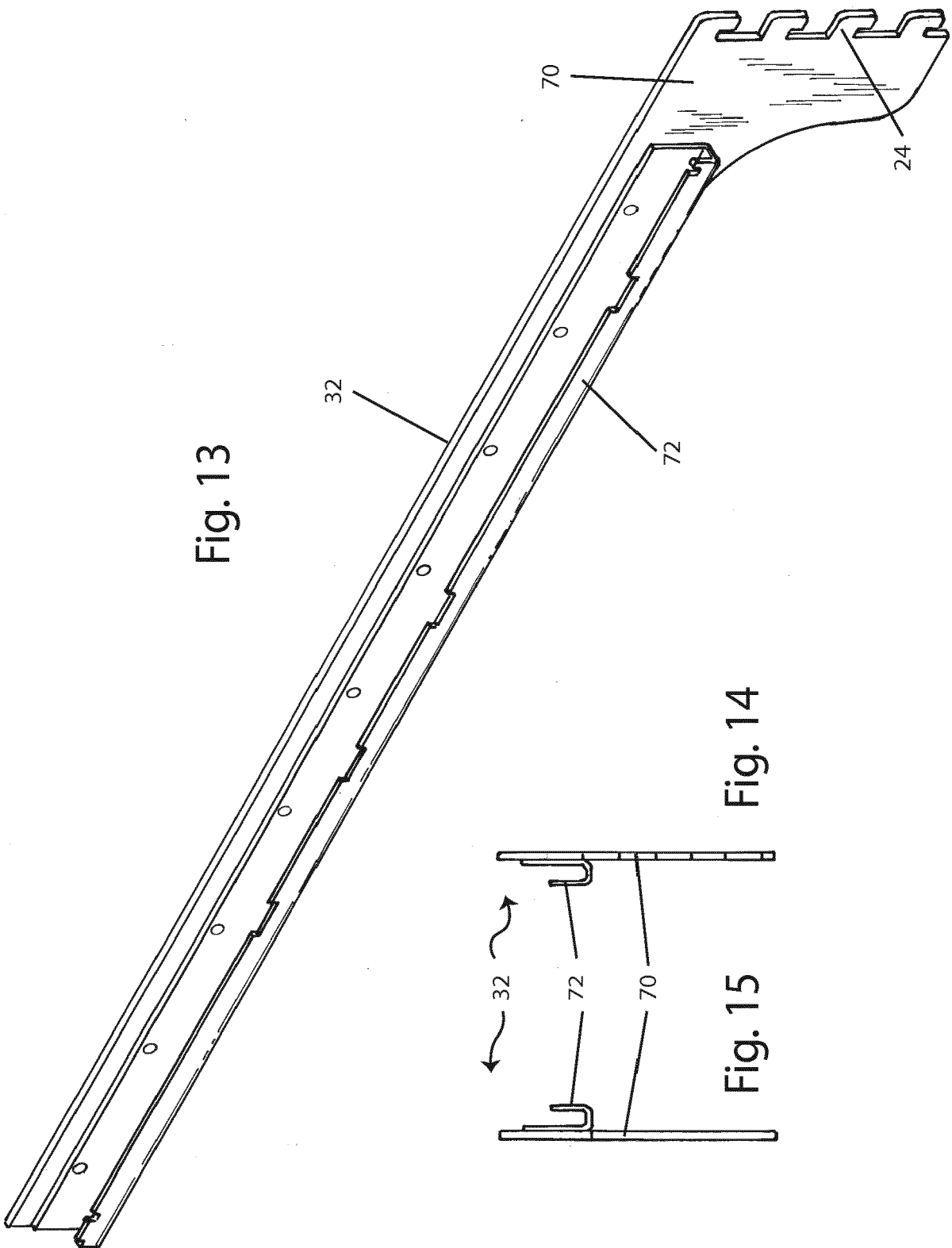
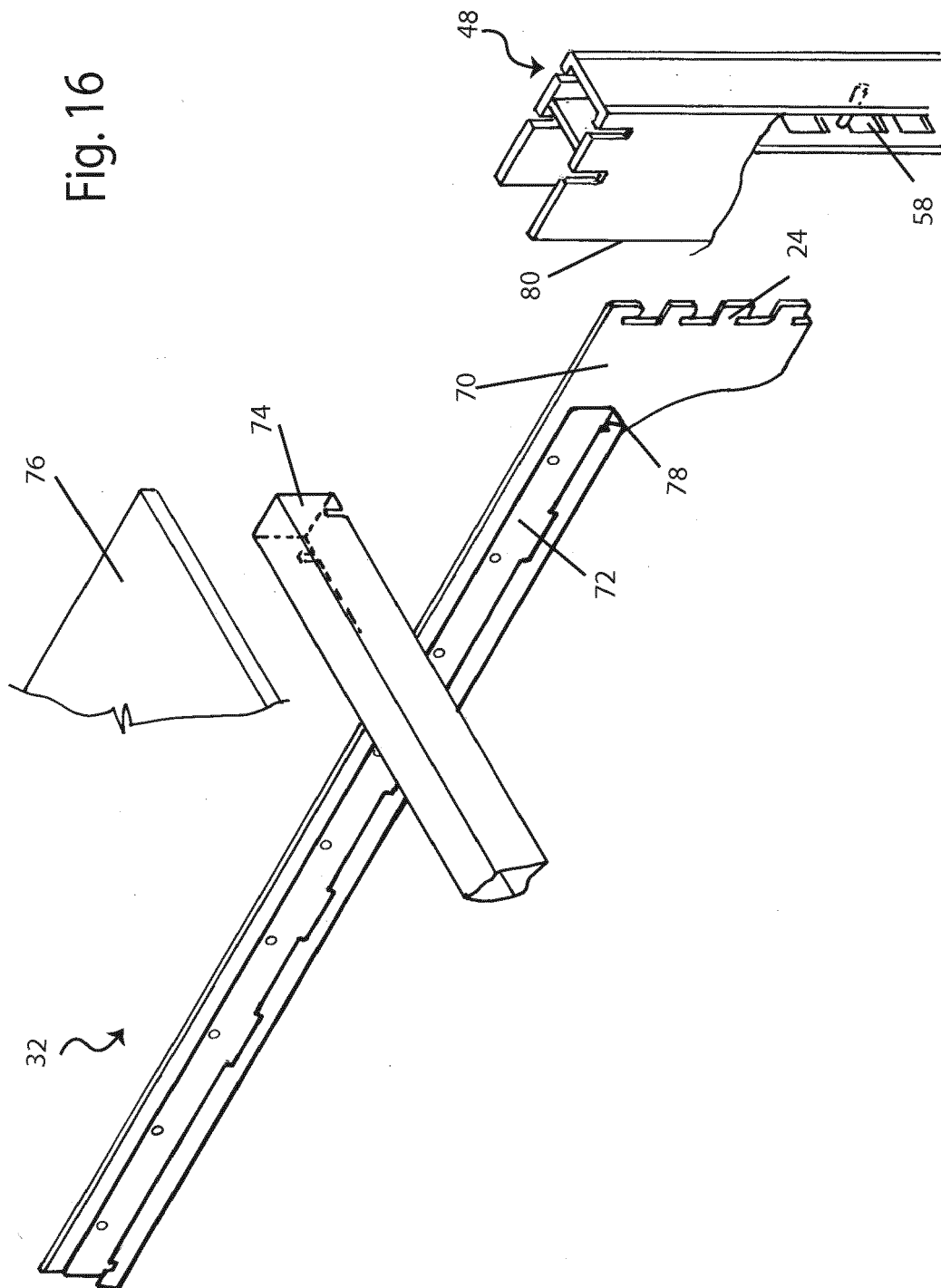
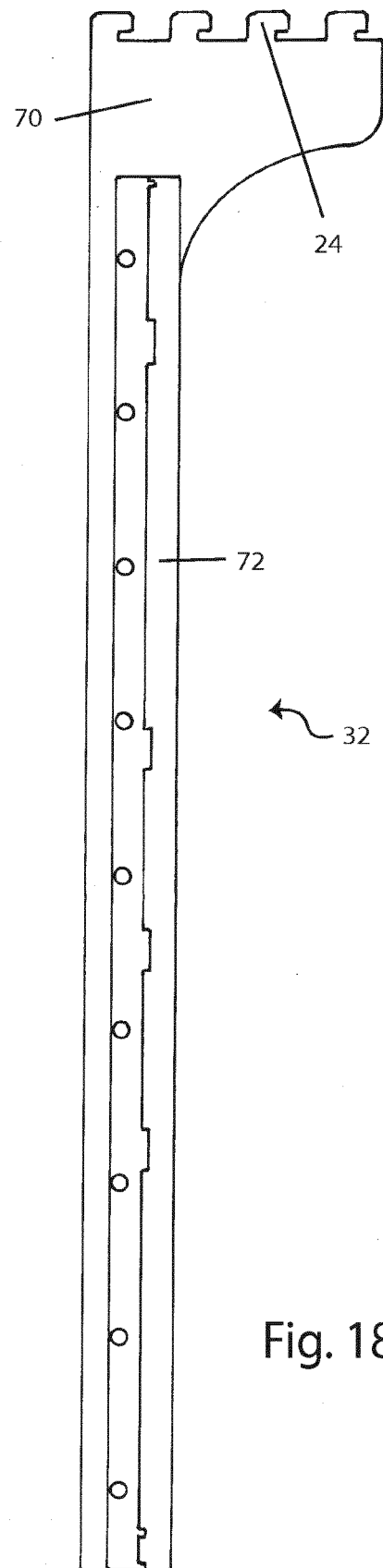
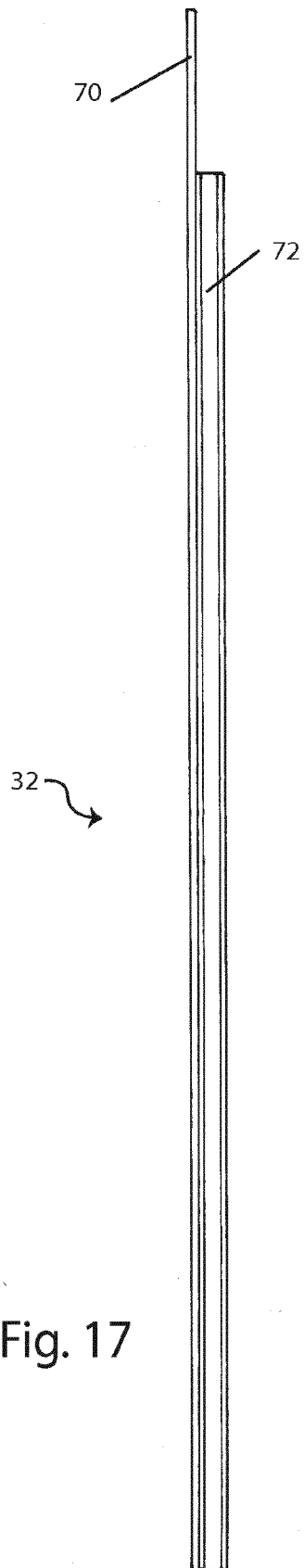


Fig. 16





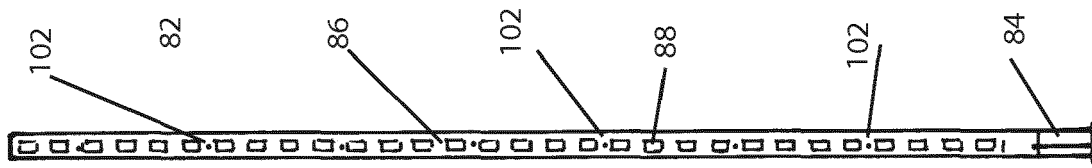


Fig. 20

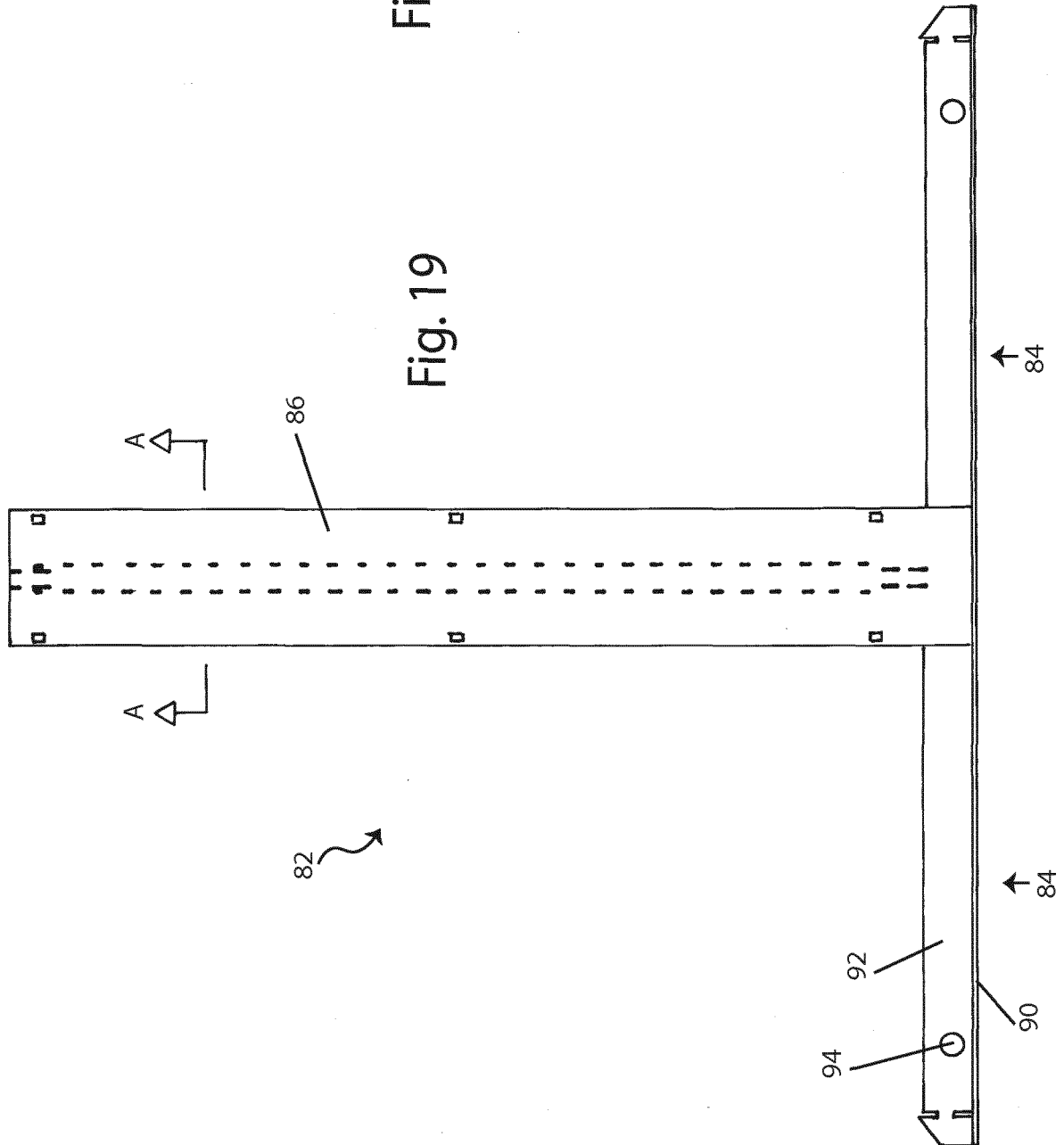
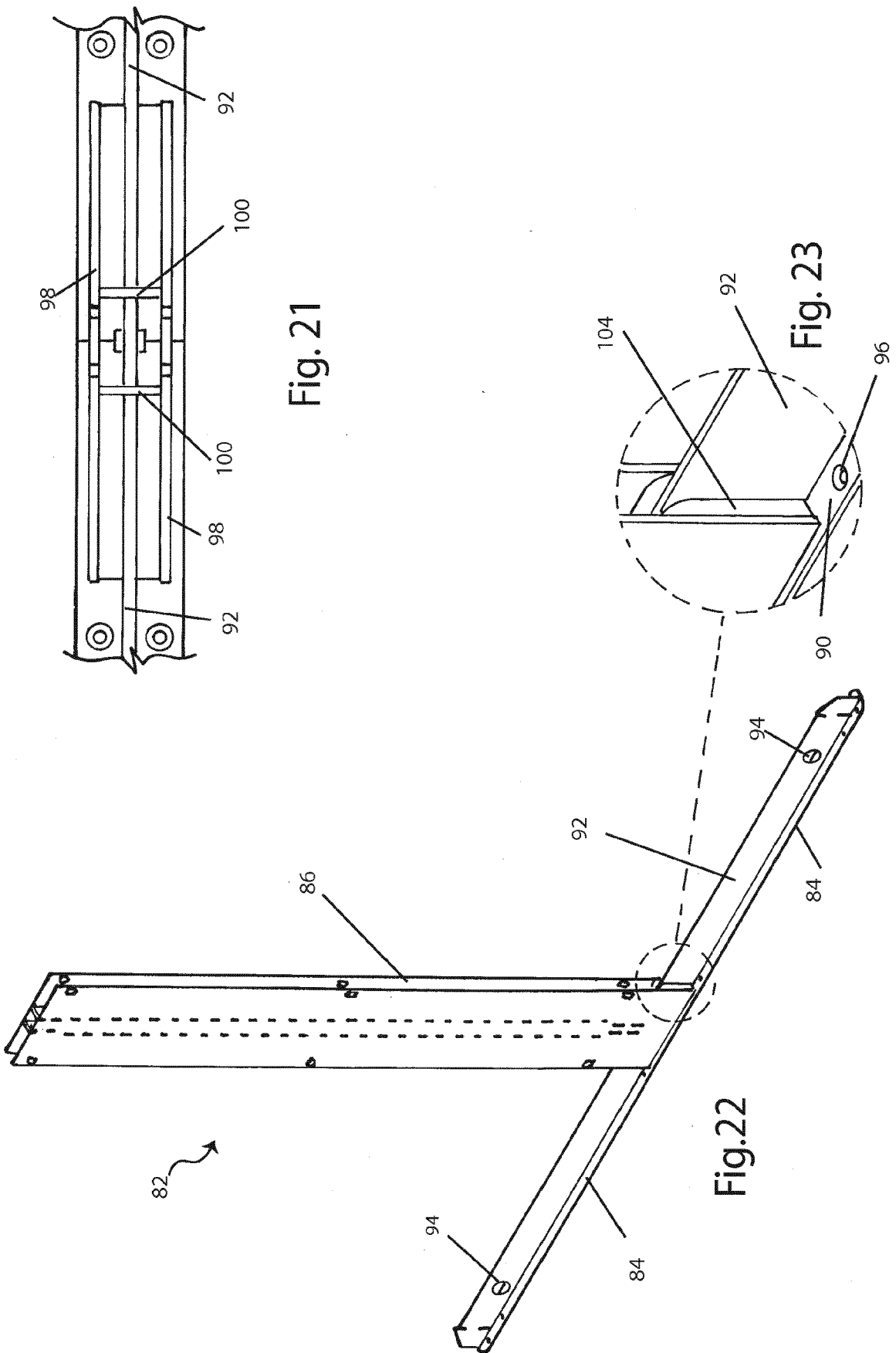


Fig. 19



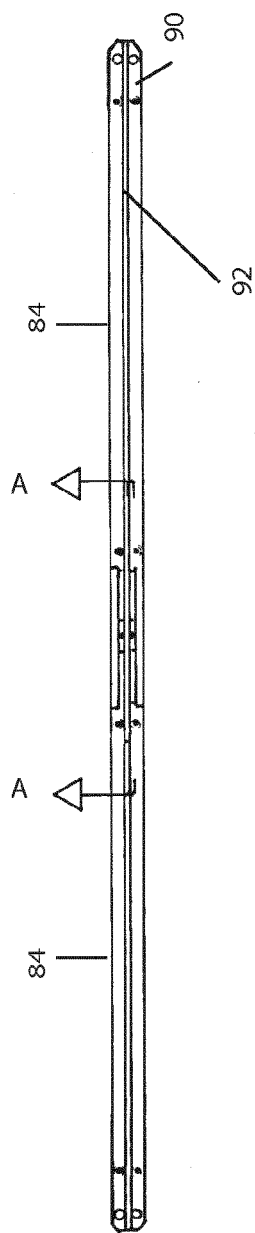


Fig. 24

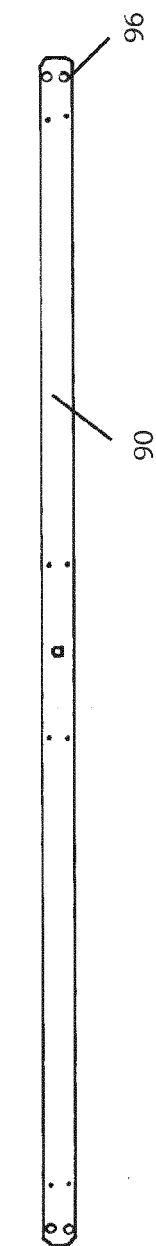


Fig. 25

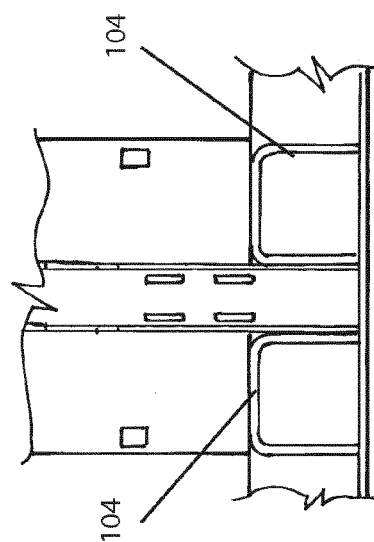


Fig. 26

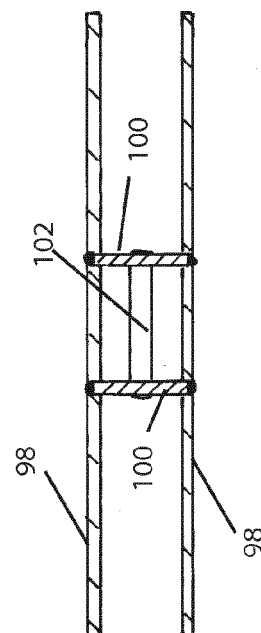


Fig. 27

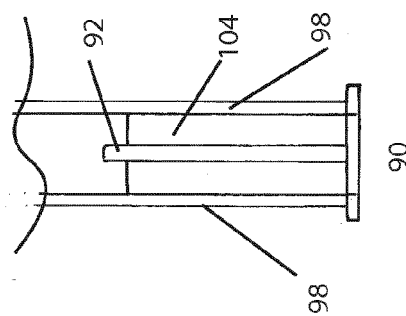


Fig. 28

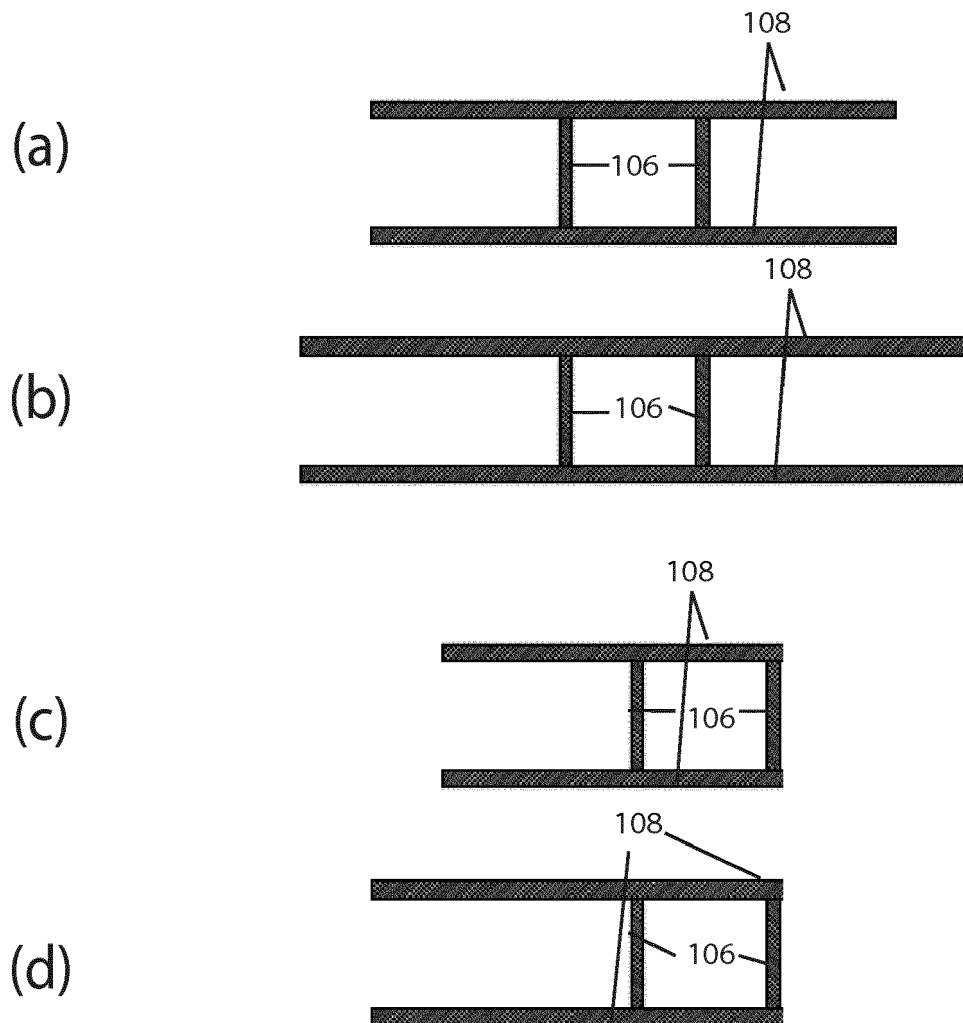


Fig. 29

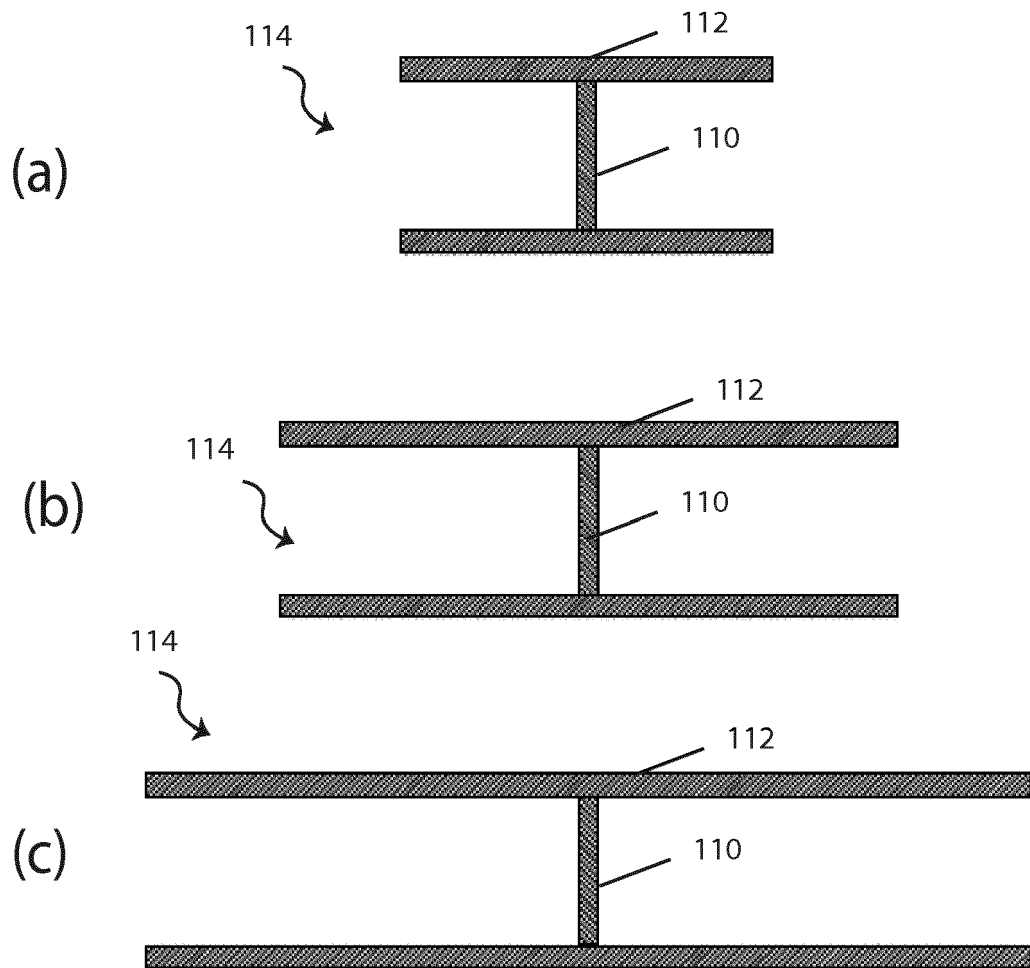


Fig. 30



EUROPEAN SEARCH REPORT

Application Number
EP 18 24 8253

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EPO FORM 1503 03.82 (P04C01)

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	DE 20 2016 100558 U1 (DWD CONCEPTS GMBH [DE]) 9 May 2017 (2017-05-09) * figures 1-3,8-10 *	1-4,6,7,13,14	INV. A47B96/14 A47B57/42 A47F5/10
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			TECHNICAL FIELDS SEARCHED (IPC)
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The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of the search 30 April 2019	Examiner Martinez Valero, J
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			

**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 18 24 8253

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