

[54] SELF-LOCKING CORNER JOINT FOR THE
WALLS OF CUPBOARD-LIKE
STRUCTURES

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312/264, 265, 108, 111, 140

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[57] ABSTRACT

The invention relates to a corner joint for the walls of cupboards, cabinets, partition structures and the like, and particularly for walls of such spaces as are subjected to strong changes in temperature and relative humidity, for example wash rooms, bathrooms, wash-houses, laundries and the like. Wall fastening means of conventional type, for example screws, nails, different types of clamps etc. are readily subjected in such places to corrosion, which may subsequently impair the strength of the joint, and result in the discolouration of surrounding finishes, etc.

8 Claims, 4 Drawing Figures

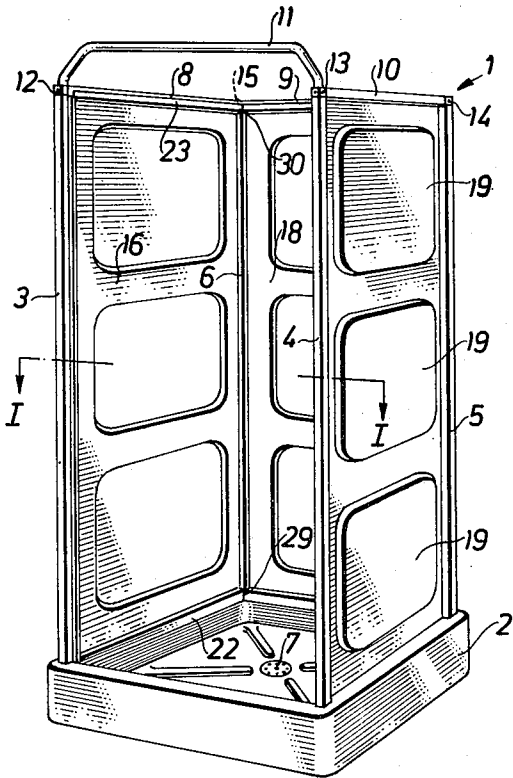


Fig. 1

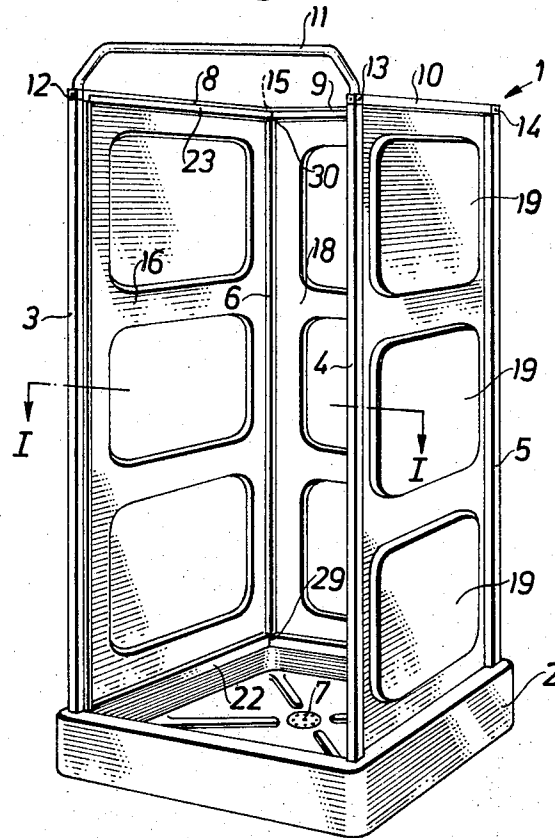
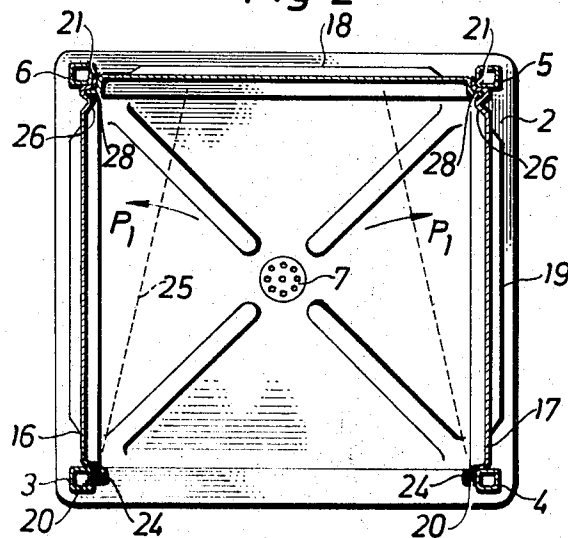
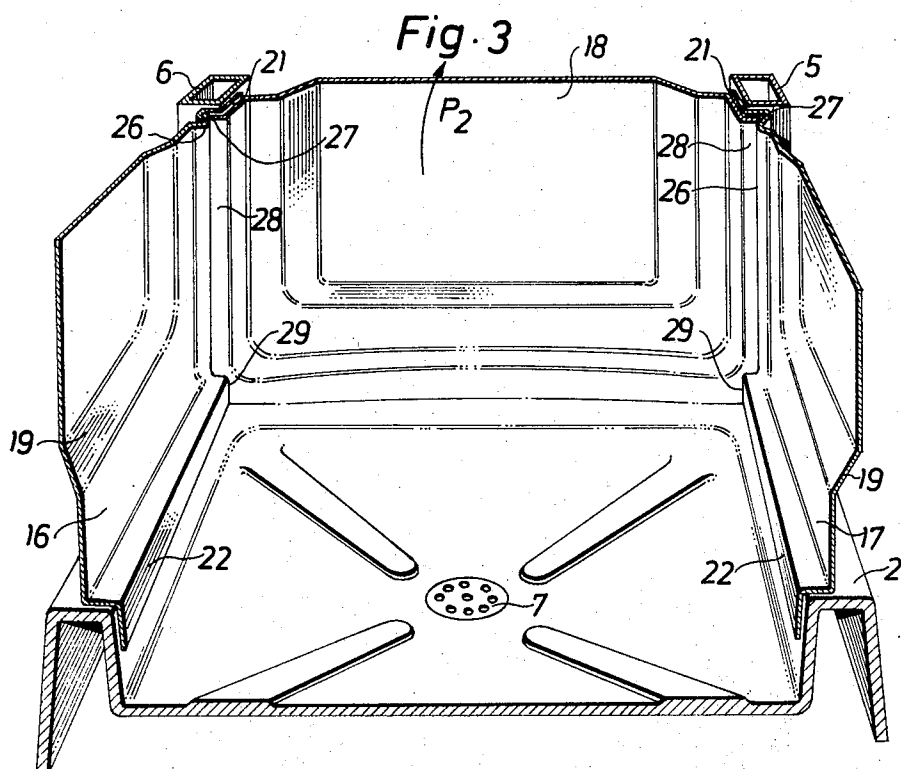
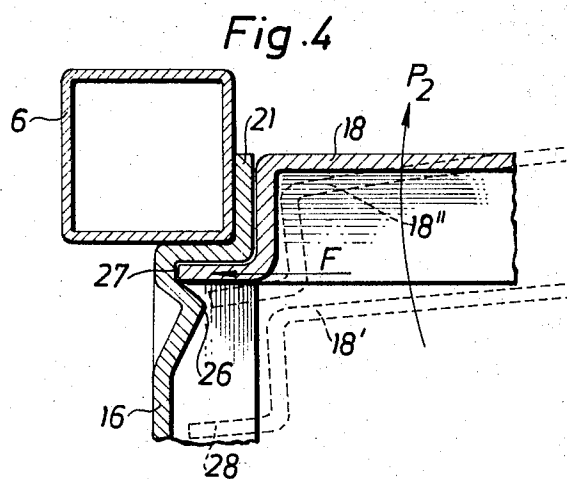


Fig. 2





SELF-LOCKING CORNER JOINT FOR THE WALLS OF CUPBOARD-LIKE STRUCTURES

The corner joint of the present invention is intended to be used with the types of cupboards, cabinets or the like with which the wall-panel supporting and actual shape-imparting portion of the structure comprises a body or a frame which is first assembled and secured and to which walls and other components are subsequently mounted in position. In accordance with the invention, the walls of such cabinets, cupboards or the like are brought into their final position in the frame, simply by inserting or pressing the walls into the frame, the walls being so constructed along the joint edges thereof that they lock each other in position as a result of the inherent resiliency possessed thereby. In this way, there is provided a joint which lacks all form of secondary locking devices. All portions of such a cupboard, cabinet or the like may be mass produced and so constructed as to enable them to be readily and conveniently assembled at the place where they are to be used, practically without the use of tools. Further, the special design of the cupboard components enables them to be packed and stored within relatively small spaces, thereby facilitating transportation etc.

The corner joint of the present invention is particularly suitable for use in the construction of shower cabinets for bathrooms and washing facilities. As is well known, all the component parts of such structures are constantly flushed internally with alternately hot and cold water. It is therefore important that the changes in length occurring in the component parts as a result of the variation in temperature to which they are subjected are compensated for, so that the joints are not subjected to harmful stresses and strains. It is also a great advantage if joints in such structures can be made completely smooth, without presenting projecting portions such as screw heads, attachment clips or the like. The invention fulfills these requirements and enables such structures to be mass produced in a simple and inexpensive manner.

Thus, the invention relates to a self-locking corner joint for such structures as cupboards, cabinets and the like in which suitably two side walls are combined with a rear wall and the side walls and rear walls are fitted in a frame structure having at least two rear, vertical side posts. The invention is mainly characterized in that the joint comprises an edge section formed on each side wall and partially embracing the vertical side posts on the surfaces thereof facing the interior of the frame, and which is provided with grooves produced by at least one bead, and further comprises an edge section arranged on vertical edges of the rear wall and provided with a flange, the outer edge of which abuts the bottom of respective grooves under resilient yielding of the rear wall, when the side walls and the rear wall are in the assembled position in the frame.

The invention will now be described in detail with reference to an embodiment thereof illustrated in the accompanying drawings, in which

FIG. 1 illustrates in perspective a shower cabinet having two side walls and a rear wall and constructed with corner joints according to the invention,

FIG. 2 is a sectional view taken through the line I—I in FIG. 1,

FIG. 3 is a perspective view of a part of a lower portion of the shower cabinet illustrated in FIG. 1, and illustrates in particular the manner in which the rear wall

is brought into position subsequent to the two side walls having been assembled.

FIG. 4 illustrates in section a vertical corner post having the form of a profiled tube, and shows the corner joint between a side wall and a rear wall in accordance with the invention, different positions of the rear wall when it is brought to the final joint position being shown by dash lines.

FIG. 1 illustrates a shower cabinet, generally identified by the reference numeral 1, having a base portion to which four vertical posts 3-6 are joined, the posts being fitted in corresponding recesses adjacent each of four corners of the base portion. With the type of shower cabinet illustrated in FIG. 1, the base portion 2 is provided with a water collecting bath provided with a drain 7 intended to be connected to an existing sewage system and suitably made from compression moulded, preferably reinforced plastics material.

The vertical posts 3-6 are mutually connected at the top thereof with three horizontal beams 8-10 and a holder or rail 11 arranged on the front of the cabinet at the top thereof, the rail being intended to support a curtain of plastics material for example. The vertical posts 3-6, and also the horizontal beams 8-10 and the rail 11, are suitably made in the form of drawn tubular sections and the joints therebetween can be produced in a known manner by corner pieces 12-15 provided with pegs capable of being readily press-fitted into the tubular sections in a manner such as to ensure reliable jointing of the resulting structure. In the same manner, a firm joint can be obtained between the vertical post 3-6 and the bottom portion 2 by suitable selection of the fit and type of joints used for the purpose, so that the base portion 2, the posts 3-6, the beams 8-10 and the curtain rail 11 form a stable frame structure subsequent to being assembled.

As will be best seen from FIG. 2, the frame structure includes two side walls 16, 17 and a rear wall 18 all securely jointed together. The walls 16-18 are produced from a thin sheet metal, the surface of which has been suitably treated, or preferably from a moulded, suitably reinforced plastics material. The walls may be divided into horizontal sections, although in the preferred embodiment illustrated in the drawings, each wall comprises a coherent structure provided with outwardly bulged portions 19 to increase the stability.

The walls 16-18 are provided along the long and short edges thereof with sections which connect the frame of the shower cabinet. Each vertical edge section of the side walls 16, 17 has a flange 20, 21 extending vertically in the plane of the wall, and each horizontal edge section has a corresponding flange 22, 23 extending horizontally in the same plane. As will be seen from FIG. 2, the flanges 20-23 on the side walls 16, 17 lie against the vertical post 3, 6 and 4, 5 respectively when the side walls 16, 17 are placed in position in the frame. In this way, the front, vertical flanges in the walls 16, 17 are held firmly to the front, vertical post 3, 4 by a rail 24 extending along the section forming part of the post. When the side walls 16, 17 are placed in position in the frame, the vertical flanges 20 are first placed beneath the rail 24 while, at the same time, the walls are held slightly obliquely inside the frame, as illustrated by the dash lines 25 in FIG. 2. Then this phase of the assembly is reached, the rear wall 18 is still not in position and the side walls 16, 17 can therefore be swung freely in

the direction shown by arrows P_1 and moved out to their respective final positions, as shown in FIG. 2.

As will be seen from FIGS. 2, 3 and 4, the side walls 16, 17 at the rear edge sections are formed with a longitudinally extending and inwardly directed bead 26, which provides a longitudinally extending groove 27, FIG. 4. As shown in FIG. 2, flanges 28 of vertical, profiled edges of the rear wall 18 are inserted in respective grooves in the side walls 16, 17, the bead 26 forming a locking means to effectively retain the rear wall 18 in position.

FIGS. 3, 4 illustrate the assembly of the rear wall 18 subsequent to the side walls 16, 17 being placed in position. The rear wall 18 is inserted in the frame and one of the vertical flanges 28, for example the flange shown to the right in the Figure, is inserted in a corresponding groove 27 in the side wall 17. The rear wall 18 may then occupy an oblique position 18', as shown with ghost lines in FIG. 4, i.e., in a position in which the left flange 28 as seen in FIG. 4 is completely free in relation to the side wall 16 having the bead 26. The rear wall 18 can then be swung in the direction of arrow P_2 , FIGS. 3, 4, wherewith the left hand flange 28 as seen in the drawings will abut the bead 26 when reaching a certain position. As previously mentioned, the rear wall 18, however, is made of thin sheet metal or preferably reinforced plastics material and is thus able to yield resiliently so that the left hand flange 28 is able to slide up onto and over the bead 26 as shown by the dash lines in position 18'', FIG. 4. Subsequent to the flange 28 being forced over the bead 26, the rear wall 18 springs back so that the flange 28 snaps down into the groove 27. The distance between the outer edges of the flanges 28 on the rear wall 18 is so adapted that a certain spring force F acting towards the bottom of the grooves 27 prevails when the rear wall 18 reaches the final position illustrated in FIG. 2. The force F causes the vertical flanges 21 on the side walls 16, 17 to be urged against the vertical posts 5 and 6 so as to effectively hold the posts in the frame structure, and ensures that the rear wall 18 is positively held by the position of the flanges 28 in the grooves 27.

As illustrated in FIG. 3, the bottom of the rear wall 18 is also provided with recesses 29 which conform to the lower horizontal profile of the side walls 16, 17. Corresponding, upper recesses 30 are arranged in the rear wall 18, as illustrated in FIG. 1. The recesses 29, 30 make it possible to insert the rear wall 18 freely to the described final position shown in FIGS. 2, 4.

The special arrangement of the distance between the two outer edges of the flanges 28 in order to produce a clamping force F causes the rear wall 18 to obtain a slightly outwardly curved shape. This means that the flanges 28 on the rear wall 18 can not be forced back over the beads 26 in the side walls 16, 17, since a pressure applied to the outside of the rear wall 18 would cause the force F to increase, i.e., would emphasize the self-locking effect of the joints. The joint, however, can be broken by inserting a chisel-like tool, for example, between one of the vertical strips 21 of the side walls 16 or 17 and a corresponding edge on the rear wall 18. This edge can then be pressed in to an extent such that a corresponding flange 28 on the rear wall 18 passes out of engagement with the adjacent bead 26 and is able to slide over the same.

As mentioned in the introduction, the described corner joint affords a number of valuable, technical ad-

vances. For example, it is simple and inexpensive to manufacture, permits easy assembly of cabinet-like structures etc. and is made without the assistance of auxiliary devices, such as screws, clamps and the like and is thereby completely free from outwardly projecting portions. In addition, the joint provides automatic compensation for changes in length of the walls as a result of variations in temperature, and can be made completely anti-corrosive by selecting suitable material. In addition, the components forming part of the joint construction are well suited for mass production on a large scale.

The invention has been described and illustrated with reference to a shower cabinet. It will be readily perceived, however, that the joint can be applied with the same technical effect in the assembly of other cabinet-like structures, such as wardrobes, cupboards and the like.

What is claimed is:

1. A self-locking corner joint for structures such as cupboards, cabinets and the like comprising a frame structure having at least two substantially parallel rigid posts, a rear wall and two side walls fitted to said frame structure, each of said side walls having an edge section partially embracing one of said rigid posts on the surfaces of the latter facing the interior of the frame, each of said edge sections of said side walls having means defining a groove, said rear wall having edge sections provided with a flange, said flanges being received in and abutting the bottom of the respective groove in said edge sections of said side walls, said rigid posts and said side walls being constructed and arranged such that the distance between the bottoms of the grooves in said edge sections of said side walls when the latter are in their assembled position is less than the distance between the edges of said flanges on said rear wall when the latter is in its natural and unassembled state, said rear wall being made of a resiliently yieldable material such that the flanges of said rear wall abut the bottoms of the respective grooves in the edge sections of said side walls under resilient yielding of said rear wall when the latter and said side walls are in their assembled position in the frame, said rear wall being bowed slightly when the edges of said flanges are accommodated in the bottoms of said grooves to thereby continuously apply a biasing force urging said edge sections of said side walls against the respective rigid posts of said frame and thereby obviating the requirement for any additional holding elements for securing the corner joint.
2. A self-locking corner joint according to claim 1 wherein said means defining a groove on said edge section of each of said side walls also defines a bead adjacent to said groove, said bead and groove being constructed and arranged such that subsequent to inserting one flange of said rear wall into a groove of one of said side walls, the other flange of said rear wall is passed over the corresponding bead on the other side wall upon temporary elastic deformation of the rear wall so that said other flange on said rear wall snaps into the groove in said other side wall to be securely implanted within the bottom of said latter groove when said rear wall springs back.
3. A self-locking corner joint according to claim 1 wherein said rigid posts have an inner corner, each of said edge sections of said side walls having a corresponding corner portion abutting and embracing a respective corner of said rigid posts.

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4. A self-locking corner joint according to claim 3 wherein said flanges on said rear wall are each constructed and arranged as a corner portion abutting and embracing the respective corner portion on the edge sections of said side walls.

5. A self-locking corner joint according to claim 4 wherein said inner corner of said rigid posts, said corner portions of said edge sections of said side walls, and said corner portions of said flanges of said rear wall are each arranged at generally right angles.

6. A self-locking corner joint according to claim 2 wherein said corner posts have a right angle corner, said edge sections of said side walls each having a first flat part disposed at right angles to a second flat part, said first and second flat parts abutting and embracing said right angle corner of said rigid posts, said second flat part of said side walls being disposed at right angles to a third flat part, said third flat part being disposed within the general plane of the respective side wall, said

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bead being interposed between said second flat part and said third flat part.

7. A self-locking corner joint according to claim 6 wherein said bead projects inwardly of the respective side wall, said groove being formed between said second part of said side wall and said bead.

8. A self-locking corner joint according to claim 6 wherein each of said flanges on said rear wall has a first flat part disposed at right angles to a second flat part, said second flat part of said rear wall being disposed at right angles to a third flat part, said third flat part being disposed within the general plane of said rear wall, said second flat part of said rear wall flange abutting said first flat part of said edge section of said respective side walls, and said first flat part of said rear wall flange abutting said second flat part of said edge section of said respective side wall.

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