

DISPLAY STRUCTURES

Field of the Invention

This invention relates to display structures and refers particularly, though not exclusively, to display structures, which are relatively easily and quickly erected and dismantled.

Background to the Invention

The increasing competitiveness of most industries has placed a greater importance on marketing. One marketing tool the use of which has increased significantly is a trade show/trade fair/exhibition ("exhibition"). In such exhibitions, an area is allocated to an exhibiting company. The company constructs a stand designed for that exhibition. It is normally purpose built, and generally of timber and like materials. In the main they are not reusable. This adds considerably to the cost, to the time taken to erect the stand, and for its removal.

The increasing use of exhibitions is now reducing the time allowed for the erection and removal of stands. Furthermore, the waste in material and effort for each stand is significant. Whilst there is some reusability, it is only for a specific stand. When that specific stand is no longer required, all construction materials are discarded.

It is therefore the principal object of the present invention to provide display structures that are more easily and thus more speedily erected and dismantled.

A further object of the present invention is to provide display structures that are reusable.

A final object of the present invention is to provide display structures that can be erected in a modular form.

Summary of the Invention

With the above and other objects in mind, the present invention provides a

display structure for a demountable display stand, including a plurality of corners, there being a column located at or adjacent each corner, each column including an elongated body terminating at its upper end with a polygonal end piece; the polygonal end piece having a number of vertically oriented, equally-spaced faces each for releasably receiving a beam, the number of faces being no less than the number of corners; and a plurality of joists extending between at least two opposite beams, the joists being for supporting thereon a roof.

Preferably, there is included at least one truss extending between at least two other opposite beams, the joists extending between the at least two opposite beams and the at least one truss.

The beams are preferably arranged with a first set of spaced-apart and generally parallel beams; and a second set of beams forming a closed rectangle write the first set.

There may be four included corners and four faces and there may be two equally spaced trusses.

Each beam preferably has at least one hole therethrough, and each truss has a plurality of openings therethrough.

The at least one hole and the plurality of openings may be for the passage therethrough of at least one item selected from the list consisting of: electrical cable, conduit, water pipe, air conditioning pipe, telecommunications cabling, computer cabling, sound system cabling, and drainage pipes.

A façade may be provided extending between the columns and covering a front face of the beams, and there may be a false ceiling extending between and supported by the plurality of joists.

Preferably, the number of faces is a whole number multiple of the number of corners.

Each of the beams may have an end plate at each end thereof for attachment to one of the faces. The faces are preferably of a height at least the same as that of the end plates.

Each column may have an elongate central tube extending between a lower flange and the polygonal end piece, the polygonal end piece including a top that locates on and is secured to an upper end of the tube. The polygonal end piece preferably has a lower ring extending between and being secured to a lower end of the polygonal end piece and the tube.

In another form, the present invention provides a column for a display structure, the column having a polygonal end piece at an upper end thereof, the polygonal end piece having a plurality of equally-spaced, vertically-oriented faces each for receiving thereon a beam. Each of the beams may have an end plate at each end thereof for attachment to one of the faces, and the faces may be of a height at least the same as that of the end plates.

Each column preferably has an elongate central tube extending between a lower flange and the polygonal end piece, the polygonal end piece including a top that locates on and is secured to an upper end of the tube. The polygonal end piece may have a lower ring extending between and being secured to a lower end of the polygonal end piece and the tube. The polygonal end piece may have blank faces between the faces.

Description of the Drawings

In order that the invention may be fully understood and readily put into practical effect, there shall now be described by way of non-limitative example only preferred embodiments of the present invention, the description being with reference to the accompanying illustrative drawings in which:

Figure 1 is a top plan view of a first embodiment;

Figure 2 is a cross-section view along the lines and in the direction of arrows 2-2 of Figure 1;

Figure 3 is a cross-section view on an enlarged scale along the lines and in the direction of arrows 3-3 of Figure 1;

Figure 4 is a side view of a corner post of Figure 1;

Figure 5 is a top plan view of the corner post of Figure 4;

Figure 6 is a view corresponding to Figure 2 but of a second embodiment; and Figures 7 to 15 are top plan views of structures according to the present invention.

Description of Preferred Embodiments

To first refer to Figures 1 to 3, there is shown a core module 10 for a display stand. The module 10 is intended to be releasably yet securely attached to a floor 12. Module 10 is generally rectangular, such as square, as shown, although other shapes may be used.

The module 10 has a plurality of columns 14. In this instance, there are four such columns 14, one at each corner of module 10. However, and as will be understood from the following description, there may be more columns 14 to provide for modules 10 of different shapes (when viewed from above). Other possible shapes include triangular, pentagonal, hexagonal, octagonal, and so forth. Joining columns 14, and being releasably yet securely attached thereto at the upper end 16 thereof, are peripheral beams 18. Beams 18 are preferably in the form of an I-beam.

The beams 18 are preferably arranged as a first set of opposite beams that are spaced apart and generally parallel, and a second set of beams, similar to the first set, with the second set of beams forming a closed rectangle with the first set. Extending between two spaced-apart and generally parallel "side" beams 18, and locating on their upper flanges, is a plurality (preferably two) of equally spaced intermediate trusses 20. The trusses 20 are securely yet releasably attached to the beams 18. Extending between two spaced apart and generally

parallel "end" beams 18, and the trusses 20, are a plurality of generally equally spaced joists 22. Joists 22 locate on top of and are releasably secured to beams 18, and are releasably secured to the sides 34 of trusses 20.

On top of joists 22 and trusses 20 is located a roof 24. Roof 24 is releasably secured to trusses 20, and joists 22, and may be made of, for example, two layers of timber such as plywood.

Beams 18 may have a number of holes 26 in their webs 28. Holes 26 may be of similar size as shown, and are to allow the passage therethrough of piping, conduit or ducting for electrical wiring, air conditioning pipes, water pipes, drainage pipes, telecommunications cabling, sound system cabling, computer cabling and the like. The holes 26 not only allow the passage therethrough of such items, but the material of web 28 around holes 26 will support those items thus reducing the need for separate holding or support structures, clips, and the like. However, these may be used, if desired.

Similar holes 32 may be provided through the sides 34 of trusses 20. These may be of different sizes (see Figure 3) if desired, and are for the same purpose as holes 26.

Beams 18 preferably have a plate 54 at each end thereof securely attached to web 28 and the flanges of the beams 18 to enable beams 18 to be releasably secured to each other in an end-on-end relationship if desired or required, and to the upper ends 16.

To conceal any tubing, cabling, piping or the like, a false ceiling 30 may be installed and extending between the lower flanges of the joists 22. These may be a loose fit, if desired, or may be held in place by clips, or the like.

Figures 4 and 5 show the columns 14. They have an upper end 16 that is a regular octagon, having four faces 38 to which beams 18 can be secured. The number of faces 38 should be the same as the number of corners, or a whole number multiple of the number of corners. The faces 38 should face from one corner towards the next adjacent corners. They should also be equally or

regularly spaced around the periphery of upper end 16. Furthermore, they should be of a height that is the same as or greater than the height of the end plates 54 of the beams 18.

The main core of the column 14 is a tube 40 that, at its lower end 42, terminates in a flange 44 able to be releasably secured to the floor 12.

The upper surface 46 of upper end 16 may be solid, if desired, or may be open. If solid it may rest on and be secured to tube 40. A lower ring 56 is securely attached to the upper end 16 and to tube 40 to securely maintain the faces 38 in correct relationship relative to the tube 40. The faces 38 may be solid, as shown, with pre-drilled or otherwise formed holes to receive nuts and bolts, or other fasteners, to pass therethrough and through corresponding holes in plates 54 to retain beams 18 in place relative to upper end 16. The intervening faces 48 may be open, solid using the same material as faces 38 or may be of a thinner material, as desired.

There may be provided a façade 50 extending around module 10 to cover beams 18 and upper ends 16. The façade 50 may be secured to upper ends 16, and may have spacers 52 between it and beams 18.

All of this is module 10, which can be used as the basis for a large number of stands. As shown in Figure 6, a second module 110 has been placed above module 10 by having flange 144 of module 110 secured to upper surface 46 of module 10. Module 110 may be generally the same as module 10.

Similar modules 10 may be placed side-by-side, as well as vertically, to provide stands of differing and/or interesting shapes. This is illustrated in Figures 7 to 15. When placed side by side, the beams 18 of two adjacent modules 10 can be attached to the one column 14 by virtue of the four faces 38.

In Figures 7 and 8, there are four modules 10 in a square, and used with other structures 54 such as, for example, canvas, to form an ellipse (Figure 7), and a square with four entry porticos (Figure 8). Alternative shapes include a rectangle with portico (Figure 9); L-shape with portico (Figures 10 and 11); T-

shape with porticos (Figure 12); cross with porticos to form an octagon (Figure 13); cross with porticos to form a circle (Figure 14); and U-shape with porticos (Figure 15). These shapes are not limiting.

As can be seen, the modules 10 can provide good access with much clear span space underneath, and clear side and end access. It is only when a square is formed by four modules 10 that centre columns are involved. Stairs may be used in conjunction with module 10 so that roof 24 can also be used as a floor. They can effectively double the display floor area. Appropriate handrails may be used for safety.

By having columns 14, beams 18, trusses 20 and joists 22 all of metal, they can be easily attached to each other by nuts and bolts, or other similar fasteners, or by welding. They may be made of steel, aluminium, or other suitable metals. Whilst there has been described in the foregoing description preferred embodiments of the present invention, it will be understood by those skilled in the technology that many variations or modifications in details of designs or construction may be made without departing from the present invention.

The Claims:

1. A display structure for a demountable display stand, including a plurality of corners, there being a column located at or adjacent each corner, each column including an elongated body terminating at its upper end with a polygonal end piece; the polygonal end piece having a number of vertically oriented, equally spaced faces each for releasably receiving a beam, the number of faces being no less than the number of included corners; and a plurality equally spaced of joists extending between at least two opposite beams, the joists being for supporting thereon a roof.
2. A display structure as claimed in claim 1, wherein there is included at least one truss extending between at least two other opposite beams, the joists extending between the at least two opposite beams and the at least one truss.
3. A display structure as claimed in claim 1 or claim 2, wherein the beams are arranged as a first set of spaced-apart and generally parallel beams; and a second set of beams forming a closed rectangle with the first set of beams.
4. A display structure as claimed in and one of claims 1 wherein there are four included corners and four faces.
5. A display structure as claimed in claim 4, wherein there are two equally spaced trusses.
6. A display structure as claimed in any one of claims 1 to 5, wherein each beam has at least one hole therethrough.
7. A display structure as claimed in any one of claims 2 to 5, wherein each truss has a plurality of openings therethrough.
8. A display structure as claimed in claim 6 and claim 7, wherein the at least one hole and the plurality of openings are for the passage therethrough

of at least one items selected from the list consisting of: electrical cable, conduit, water pipe, air conditioning pipe, telecommunications cabling, computer cabling, sound system cabling, and drainage pipes.

9. A display structure as claimed in any one of claims 1 to 8, wherein a facade is provided extending between the columns and being in front of the beams so as to cover a front of the beams.
10. A display structure as claimed in any one of claims 1 to 9, further including a false ceiling extending between and supported by the plurality of joists.
11. A display structure as claimed in any one of claims 1 to 10, wherein the number of faces is a whole number multiple of the number of corners.
12. A display structure as claimed in any one of claims 1 to 11, wherein each of the beams has an end plate at each end thereof for attachment to one of the faces.
13. A display structure as claimed in claim 12, wherein the faces are of a height at least the same as that of the end plates.
14. A display structure as claimed in any one of claims 1 to 13, wherein each column has an elongate central tube extending between a lower flange and the polygonal end piece, the polygonal end piece including a top which locates on and is secured to an upper end of the tube.
15. A display structure as claimed in claim 14, wherein the polygonal end piece has a lower ring extending between and being secured to a lower end of the polygonal end piece and the tube.
16. A column for a display structure, the column having a polygonal end piece at an upper end thereof, wherein each column has an elongate central tube extending between a lower flange and the polygonal end piece, the polygonal end piece having a plurality of equally-spaced, vertically-oriented faces each for receiving thereon a beam.
17. A column as claimed in claim 16, wherein each of the beams has an end plate at each end thereof for attachment to one of the faces.

18. A column as claimed in claim 17, wherein the faces are of a height at least the same as that of the end plates.
19. A column as claimed in any one of claims 16 to 18, wherein the polygonal end piece including a top which locates on and is secured to an upper end of the tube.
20. A column as claimed in claim 19 wherein the polygonal end piece has a lower ring extending between and being secured to a lower end of the polygonal end piece and the tube.
21. A column as claimed in claim 19 or claim 20, wherein the polygonal end piece has blank faces between the faces.

ABSTRACT**DISPLAY STRUCTURES**

A display structure for a demountable display stand, including a plurality of, there being a column located at or adjacent each corner. Each column includes an elongated body terminating at its upper end with a polygonal end piece; the polygonal end piece having a number of vertically oriented, equally-spaced faces each for releasably receiving a beam, the number of faces being no less than the number of corners. A plurality equally spaced of joists extend between at least two opposite beams, the joists being for supporting thereon a roof. At least one truss extends between at least two other opposite beams, the joists extending between the at least two opposite beams and the least one truss. A column for such a structure is also disclosed.

Figure 1