Oct. 13, 1970 F. VECCHIARELLI ET AL 3,533,587

BEAM CLAMP

Original Filed Aug. 25, 1967 2 Sheets-Sheet 1

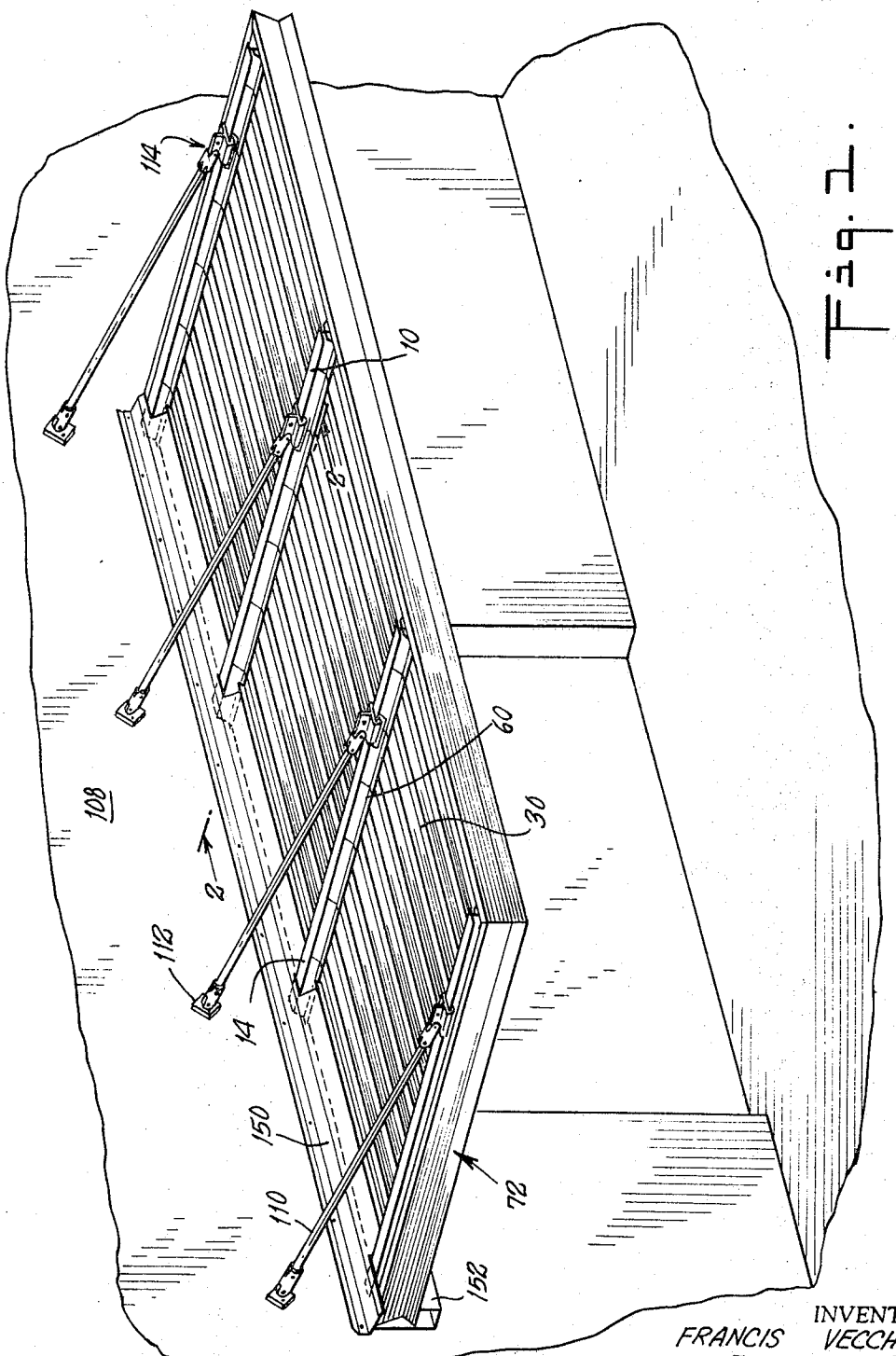

Fig. 1.

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Fig. 5.

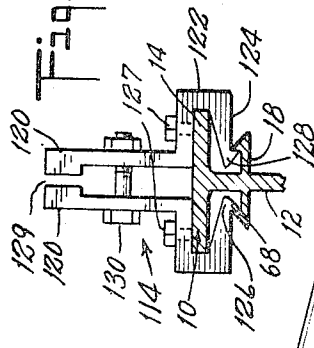

Fig. 4.

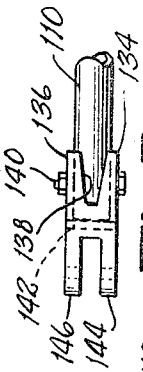

Fig. 3

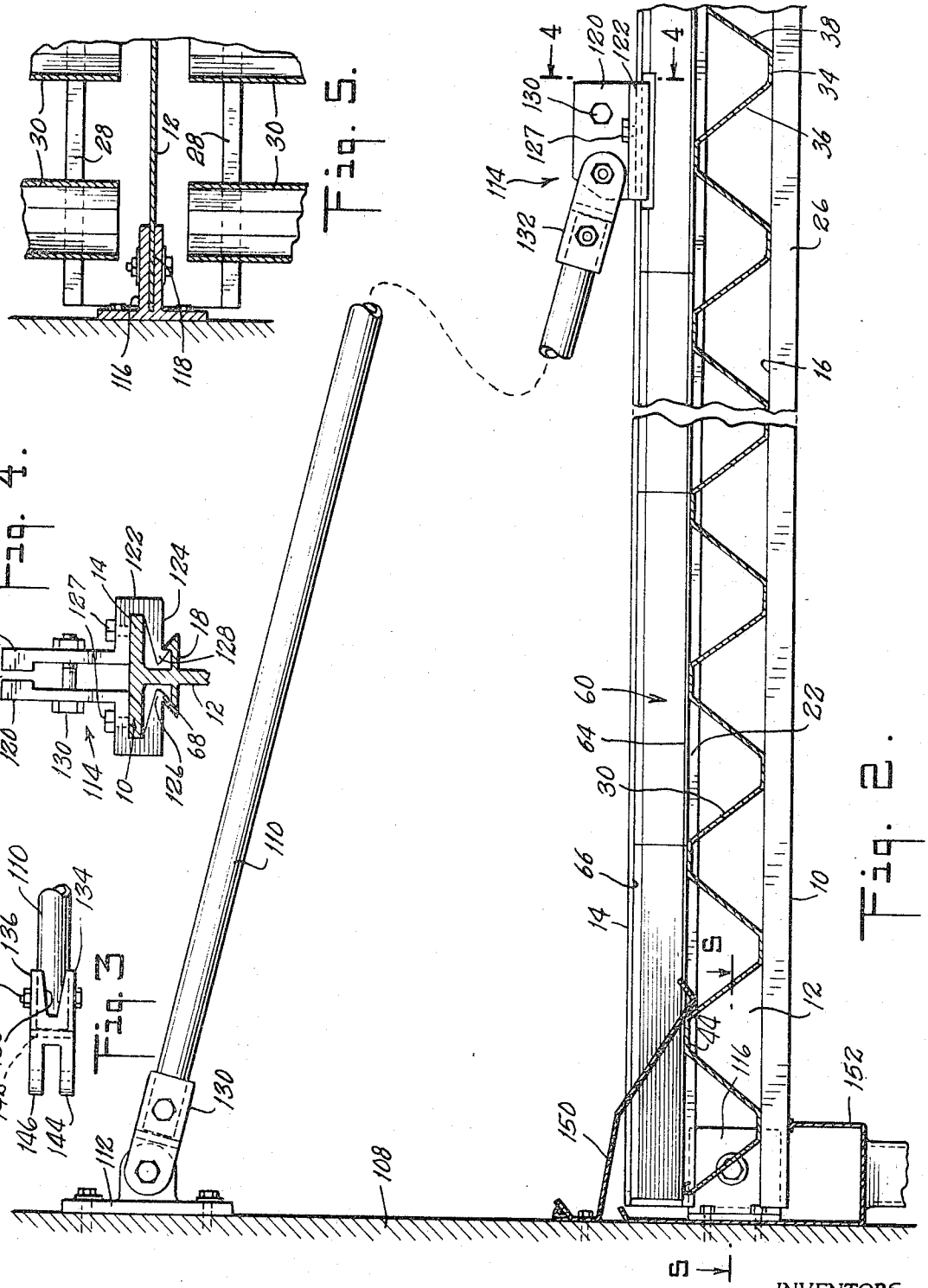

Fig. 2.

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BEAM CLAMP

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Original application Aug. 25, 1967, Ser. 663,306. Divided and this application Oct. 4, 1968, Ser. No. 797,292
Int. Cl. E04b 1/40
U.S. Cl. 248—228 2 Claims

ABSTRACT OF THE DISCLOSURE

Beam elements comprising a web having at opposite edges thereof a minor end flange and a major end flange. A series of articulated roof panels separably interconnected to each other are supported on the major flange. Locking ribs are formed along the face of the beam web forming a gap adapted to receive a free edge of a locking clip. A locking clip has an edge thereof in said gap and the other edge against the upper surface of the roof panels. The major end flange is in the form of a channel adapted to receive and carry off surface water discharges from the roof surface. A facia covers the exposed peripheral sides of the structure. The facia forms a trough communicating with drainage channels of the beams or with the free ends of roof channels. The structural member is supported either from the face of a building by use of overhead cantilever supports or tension rods, or as a free-standing structure by use of suitable posts or pillars, or as a combination of overhead supports and posts supports by attachment to the wall and to the posts.

BRIEF SUMMARY OF THE INVENTION

The invention is a marquee structure including a beam element having a web, a minor end flange on the web, a locking rib on the web inwardly spaced from the minor end flange at each face of the web and forming at the inner faces of the flange a pair of gaps adapted to receive the free edges of a supporting bracket. A supporting bracket provides an upstanding cantilever-attachment flange, a beam flange embracing body and a pair of oppositely disposed bracket locking flanges adapted, respectively, to enter the gaps at the inner faces of the minor end flange. The locking ribs have formed a bead along their free edges and the bracket locking flanges having a similar bead formed along their free edges adapted to engage, respectively, the first named beads. The bracket is separable into a pair of identical sections on a vertical medial line through the flange whereby the free edges of the locking flanges may be inserted into their respective gaps in a lateral direction in respect to the opposite edges of the beam flange.

This is a division of application Ser. No. 663,306, filed Aug. 25, 1967, now abandoned.

This invention relates to weather-tight shelters of all kinds, including but not limited to roofs, porticos, marquees, ceilings, sun shelters, patio covers, canopies, carports, porch covers, fences and storm shutters.

It is a purpose of the invention to provide a cover structure comprised of a plurality of elements including interconnected panel elements which will be weatherproof, strong and of pleasing appearance, means comprising supporting beams for such panels, and peripheral facia members, all interconnected in a simple and secure manner to provide complete drainage of surface water where required.

Moreover, it is an object of the invention to provide a simple structural element comprising a structural module.

It is a particular purpose of the invention to provide a modular portico system consisting of beam elements, inter-engaged roof panels, locking clips and facia members, of such number and size as to enable an unskilled person to erect a modular structural member with a minimum of effort and simple tools, and one which will require a minimum number of bolts and screws.

It is a further object of the invention to so form the component parts of the system as to render modular assemblies and elements of such assemblies compatible with each other to the extent that any number of them may be integrated into a structure of required dimensions.

It is a further object of the invention by utilizing roof panels of uniform length within the modules to utilize pre-cut and pre-packaged sections of roof panels of a fixed length to construct structures of any size from said packages and, therefore, reduce considerably the amount of cutting required for specific installations and, by so doing, reduce the amount of waste lengths of panels which would otherwise ensue.

BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWINGS

The invention can be more fully understood by reading the following detailed specification in light of the drawings, wherein:

FIG. 1 is a perspective view of a marquee structure in which the invention is embodied;

FIG. 2 is a sectional view on line 2–2 of FIG. 1;

FIG. 3 is a plan view of a bifurcated fitting of the ends of the overhead supporting rods in marquee structures;

FIG. 4 is a cross-sectional view on line 4–4 of FIG. 2;

FIG. 5 is a cross-sectional view on line 5–5 of FIG. 2.

The major end flange **16** is formed as a channel by reason of an upstanding web **26** which runs along the length of the major end flange at its outer extremity. The upstanding web **26** terminates in an inwardly extending portion comprising a panel support flange **28**.

The roof panels **30** are interconnected with each other at adjacent interlocking edges. Each panel is formed of a pair of trough-shaped portions. More specifically, the panel **30** of FIG. 2, for example, has trough-shaped body sections each having a trough web **34** and upwarly diverging ramp sections **36** and **38**. The free edges of the panels are disposed in a common plane. One edge has formed along its length a female bead (not shown) which is generally cylindrical in shape and open at the opposite ends thereof. The opposite edge of the panel is in the form of an open ended, generally cylindrical male bead (not shown) which extends along the length of the panel. The female bead has an internal diameter sufficiently large to receive the male bead of an adjacent panel for the purpose of forming a tight interconnection between adjacent panels. Adjacent trough-shaped body portions of a panel are interconnected by a horizontal apex web **44** and in the illustrative embodiment of the panel.

FIGS. 1 and 2 show that the marquee may be supported from some existing building structure by resort to cantilever type support rods, although the use of the invention for the formation of free standing shelters by resort to supporting posts or pillars extending upwardly from a ground level surface, for example, is contemplated.

In the installation of any desired structure, a requisite number of beam elements **10**, such as the four shown in FIG. 1, are suitably installed at a predetermined height and in a parallel relationship forming thereby a support for roof panels between adjacent beams. Assuming that two beams **10** have been so installed, it now becomes a simple matter to install the roof panels by resting the ends of such panels on the panel support flange **16** of spaced beams such that the ends of the panels are in contact or substantially in contact with the flange **22** of the facing abutment rib **20** of spaced beams. In so installing the panels, they can be installed section-by-section, as

above described, and when so installed, they will form a weather-tight cover as stated before. After the panel sections have been installed, the locking clips **60** are put into place.

The obtuse wing **64** of the locking clip is pressed down into engagement with the apex of the panels **30** so that the acute locking wing **66** can be inserted into the slot formed between the minor end flange **14** and the locking rib **18**. When so inserted and then released, the resilience of the panel sections **30** will tilt the locking clip **60** upwardly to effect engagement between the beads **68** and the edge of the clip.

When a preselected number of portico modules has been installed, the exposed periphery of the installation has applied thereto a facia member **72** as in FIG. 1, for example.

When the portico system is used for the construction of a marquee having cantilevered or tension rod supports from overhead, as shown in FIGS. 1 and 2, supports extending from the face **108** of a building, such as rods **110** pivoted between a bracket **112** anchored to the face of the building and a special marquee bracket **114** attached to the beam elements and being so formed and arranged as to make special locking engagement with the beads **68** of the locking ribs **18**. The rear end of the beam elements is attached by building anchor brackets **116**, as shown in FIG. 2. Here the bracket has a forwardly extending bifurcated portion **118** which is adapted to receive the web **12** of the beam element.

The marquee bracket **114** is best shown in the view of FIG. 4 which is a transverse section through the beam element to which the bracket is attached. In this figure, the bracket is shown as consisting of a pair of identical upstanding support rod attachment flanges **120**. Each flange at its base has a beam flange embracing body **122** with an inwardly extending bracket locking flange **124** which terminates in a locking bead **126**. The free end of the bracket locking flange **124** is adapted to enter the slot formed between the minor end flange **14** of the beam element and the locking rib **18** thereof. The free edge of each bracket locking flange has formed thereon a locking bead **128** which is the same as the locking bead **68** of the locking rib of the beam element with the exception that it is reversely disposed.

When the minor end flange **14** is embraced by the beam flange embracing body **122** of the marquee bracket **114** and the free edges of the bracket locking flanges **124** are within the gap between the minor end flange **14** and the locking rib of the beam element, the upstanding support rod attachment flanges **120** are slightly separated, leaving a gap **129** at the confronting free edges. When the nut on the flange connecting bolt **130** is but slightly tightened, the marquee bracket will slide freely along the flange of the beam element and thereby facilitates adjustment thereof as may be necessary for levelling the marquee structure. When a level attitude has been achieved, the nut is tightened to bring the bracket elements into clamping engagement with the flange of the beam element. This action will pivot the beam flange embracing body on the edge of the minor end flange **14** and throw the bracket locking flanges **124** downwardly with the result that the locking bead **126** is in engagement with the bead on the locking rib of the beam element. At this time the upper ends of the upstanding cantilever attachment flanges **120** will be in contact with each other and the bracket **114** will be tightly locked to the flange of the beam. One or more screws **127** may be employed to fix the bracket to the beam flange when its ultimate position is determined. The locking bracket in combination with the upper flange of the beam, by virtue of its ability to be attached at any point along the length of the upper flange, can therefore be placed at the best position along the beam to gain maximum strength of the beam structure by the proper selection of amount of overhanging structure and also provide for lower wall mounting heights for better appearance.

The fittings **130** and **132** at the opposite ends of the support rod **110** are, as shown in FIG. 3, bifurcated structures consisting of a pair of fingers **134** and **136** formed by diametrically opposite notches **138** formed in the rod engaging socket of the fitting. This imparts a degree of resilence to the socket and permits the fingers **134** and **136** to be drawn up tightly against the end of the rod **110** by the bolt **140**. A transverse internal web **142** connects the fingers **134** and **136** of the fitting and seals it against passage of water therethrough. A pair of apertured ears **144** and **146** are adapted to straddle the brackets **112** and **114** so that the rod may be attached thereto by bolts passing through the fittings and the related brackets.

It is contemplated that suitable drainage structures be used with a marquee, as that shown in FIGS. 1 and 2, for draining rain water at the end of the marquee adjacent the building wall. As best shown in FIG. 2, a flashing strip **150** is attached to the wall **108**. This strip extends the width of the marquee and covers the gap between the inner edge of the marquee and the buliding wall. As best shown in FIG. 2, the flashing strip extends downwardly from the building wall toward the upper surface of the marquee roof at a relatively gentle inclination and then continues downwardly at a greater inclination, terminating in the panel trough beyond the apex flange 44. By so disposing the flashing strip, it will resist wind pressure and driving rain. Any rain which may be driven under the flashing strip and beyond the edge of the last panel, can be taken care of by a gutter **152** extending the width of the marquee structure attached to the wall **108** of the building.

We claim:

1. In a marquee structure including a beam element having a web, a minor end flange on said web, a locking rib on said web inwardly spaced from said minor end flange at each face of said web and forming at the inner faces of said flange a pair of gaps adapted to receive the free edges of a supporting bracket, a suporting bracket having an upstanding cantilever-attachment flange, a beam flange embracing body and a pair of oppositely disposed bracket locking flanges adapted, respectively, to enter said gaps, said locking ribs having formed a bead along their free edges and said bracket locking flanges having a similar bead formed along their free edges adapted to engage, respectively, said first named beads, said bracket being separable into a pair of identical sections on a vertical medial through said flange whereby the free edges of said locking flanges may be inserted into their respective gaps in a lateral direction in respect to the opposite edges of said beam flange.

2. In a marquee structure including a beam element having a web, a minor end flange on said web, a locking rib on said web inwardly spaced from said minor end flange at each face of said web and forming at the inner faces of said flange a pair of gaps adapted to receive the free edges of a supporting bracket, a supporting bracket having an upstanding cantilever-attachment flange, a beam flange embracing body and a pair of oppositely disposed bracket locking flanges adapted, respectively, to enter said gaps said locking ribs having formed a bead along their free edges and said bracket locking flanges having a similar bead formed along their free edges adapted to engage, respectively, said first named beads, said bracket being separable into a pair of identical sections on a vertical medial line through said cantilever-attaching flange whereby the free edges of said bracket locking flanges may be inserted into their respective gaps in a lateral direction in respect to opposite edges of said beam flange and said beam flange spaces said cantilever-attachment flanges from each other when said bracket flanges are mounted on said beam element, whereby said bracket locking flanges are pivoted downwardly about the

respective edges of said beam flange and said beads are oppositely engaged with each other when said cantilever-attaching flanges are drawn together.

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U.S. Cl. X.R.

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