

Aug. 14, 1962

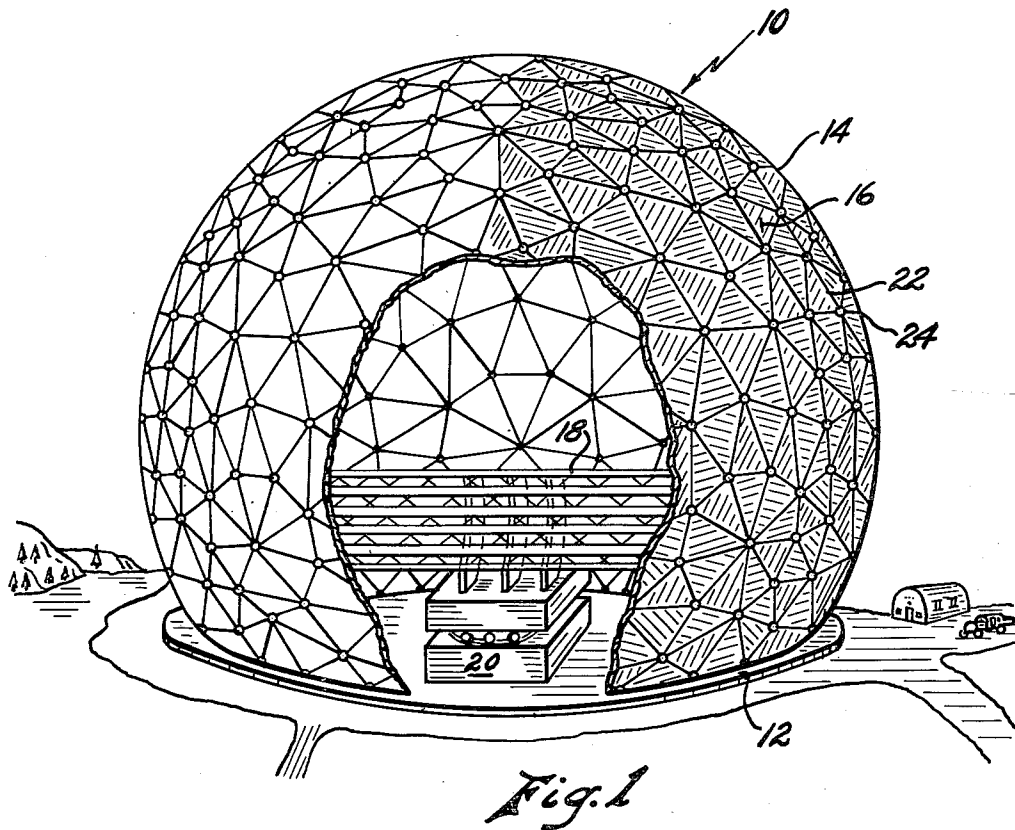
T. F. KING ET AL

3,049,201

BASE DETAILS

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2 Sheets-Sheet 1



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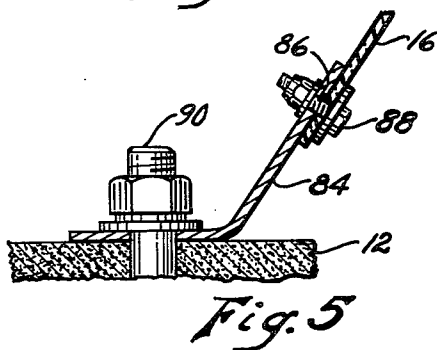
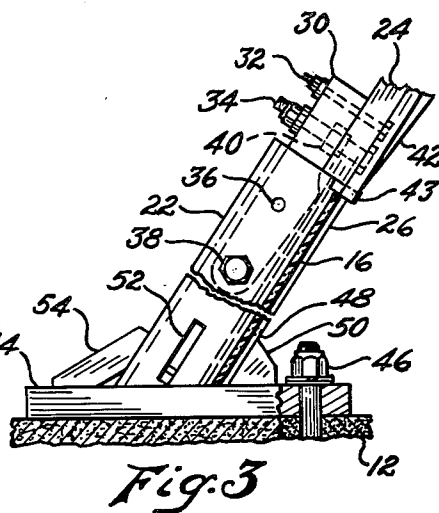
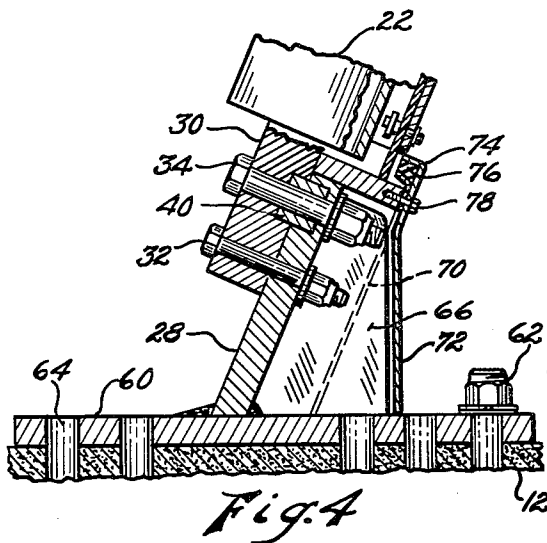
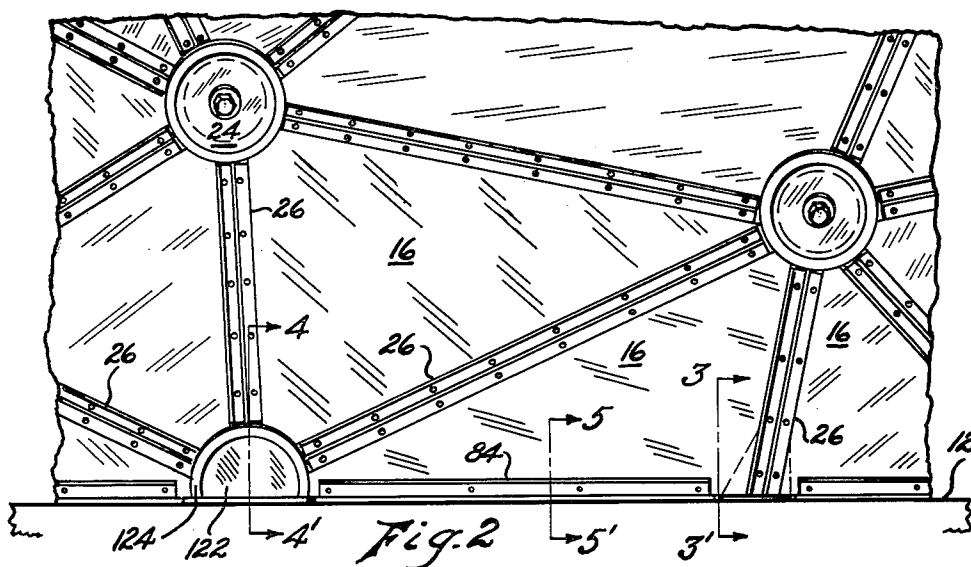
T. F. KING ET AL

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BASE DETAILS

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2 Sheets-Sheet 2



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1

3,049,201

BASE DETAILS

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3 Claims. (Cl. 189—36)

This invention relates to building construction, and more particularly, to the manner in which the base portions of a building framework and the inclosures for said framework are secured in place.

In copending applications, entitled, "Structural Devices and Methods Pertaining Thereto," and "Structural Devices," Serial Nos. 790,990 and 790,993, now Patent No. 2,978,704, there are disclosed two buildings, the fabrication of which according to predetermined considerations results in buildings with preselected electrical characteristics which render said buildings suitable for use as radome devices. Additionally, the advantages inherent in the use of said buildings, particularly to house substantially large antenna devices in areas subject to adverse weather conditions, was set forth.

The present invention is concerned with the manner of terminating members, membranes and interlocking devices comprising the building at a base provided therefor. It has been disclosed previously in said copending applications that because of the many and varied sites which might be selected for the erection of such a building it would be impractical to set forth with particularity a standard procedure for erecting such a building. By and large, many of the details for erecting the framework and for inclosing the framework can be worked out in advance of erecting the framework, but some considerations, such as those involved in the erection of a base for the framework, and whether the base must be constructed prior to or concurrently with the erection of the framework will depend on whether an existing site is to be inclosed by the building, or whether the building is to be constructed initially, and then, the electrical and electronic apparatus included within the building. Then again, in instances where the terrain is not appropriate it may be necessary to erect a pile structure for supporting a base or it may be preferable to erect a tower for fabricating the framework. However, it may be assumed for the purposes of the present invention that a base will be provided for the building.

Accordingly, it is an object of the present invention to provide the means and the manner in which members and membranes comprising a building are attached to a base provided therefor.

It is a second object of the present invention to provide the means and the manner in which a building framework and enclosing membranes therefor are terminated at a base provided for said framework.

It is a third object of the present invention to provide the means and the manner in which members comprising a building framework and enclosing membranes therefor terminating at a base provided for the building are attached thereto.

It is a fourth object of the present invention to provide the means and the manner in which a building framework and enclosing membranes therefor terminating at a base provided for said framework are attached thereto for rigidly supporting the building.

It is a fifth object of the present invention to provide the means and the manner in which a building framework and enclosing membranes therefor terminating at a base provided for said framework are attached thereto for protecting the interior of the building from external weather conditions.

2

It is a sixth object of the present invention to provide the means and the manner for securing members comprising a building framework, interlocking devices for securing said members in erecting said framework, and enclosing membranes for said framework, which lie along the base plane of said framework, to a base provided for erecting the building.

Accordingly, the present invention is involved with the means and the manner for attaching the base components of a building fabricated from interconnected members and enclosed by membranes to a base provided for said building. The building may conveniently be fabricated from electrically conductive members and enclosed by electrically non-conductive membranes to impart preselected electrical characteristics thereto for fabricating a radome device as disclosed in said copending applications.

Members, membranes, and interconnecting devices for said members occurring at the base plane of the framework are attached, and supported at a base provided for the building in a manner to provide a rigid, and substantially weather-resistant structure. Additionally, the means and manner disclosed for terminating the base of the building is equally suitable for erecting the building beginning at the base of the framework, in which case a base is required initially, or by an alternate method, of erecting the building by means of a centrally located tower, in which case the top of the framework is erected initially and the base of the framework is fabricated and set into a base provided therefor after the framework is substantially assembled.

These and other objects, features, and advantages will become more apparent when taken in conjunction with the following detailed description and the accompanying drawings wherein:

FIG. 1 is a cutaway view of a building fabricated from interconnected members forming a framework and enclosed with membranes, the members and membranes terminating at a base provided for said building;

FIG. 2 is a front elevational view illustrative of a portion of the base of the building shown in FIG. 1 depicting the members, membranes, and interconnecting devices that occur at the base plane of the building;

FIG. 3 is a side view taken along the line 3—3' in FIG. 2 depicting the manner in which a member occurring at the base plane of the framework is attached and supported at the base of the building;

FIG. 4 is a cross-sectional view taken along the line 4—4' in FIG. 2 depicting the manner in which a member attached to an interlocking device occurring at the base plane of the framework is attached and supported at the base of the building; and

FIG. 5 is a cross-sectional view taken along the line 5—5' in FIG. 2 depicting the manner in which a membrane occurring at the base plane of framework is attached and supported at the base of the building.

Referring now to FIG. 1, there is shown a building 10, having preselected electrical characteristics, and fabricated in accordance with the principles disclosed in copending applications, Serial Nos. 790,990 and 790,993, now Patent No. 2,978,704. The building is mounted on a base 12 provided therefor and is comprised of an electrically-conductive framework 14 which is enclosed by electrically non-conductive membranes 16 so that it can function as a radome device. A portion of the framework and associated membranes is cut away to expose an antenna device 18 and a source 20 of electromagnetic wave energy, which may conveniently be included within the building. The framework 14 is comprised of electrically conductive members 22 which can be fabricated from a metal, such as aluminum. Circular terminal hubs 24 or tie points fabricated from a metal such as aluminum, are employed to interlock members converging at

3

a common terminal in the configuration of the framework. In the configuration of the framework disclosed in copending application, Serial No. 790,990, 5 or 6 members terminate at a hub terminal. In the configuration depicted herein based upon copending application Serial No. 790,993, 5 to 9 members terminate at a hub terminal. The subject matter of the present invention for attaching members, membranes, and hub terminals of the framework to the base is applicable to both disclosed configurations and to buildings fabricated with other configurations within the scope of said copending applications.

Referring now to FIG. 2, there is shown a portion of the base of the building shown in FIG. 1, representative of the usual terminations occurring at the base. Three basic terminations are shown. In the simplest instance, a member 22 (see FIG. 4), attached to a hub 24 and carrying two membranes 16 secured thereto by a fastening device 26, terminates at the base 12. FIG. 3 depicts the attachment and support of the member 22 at the base. Secondly, a portion of a hub 24, having a plurality of members 28 (see FIG. 4) attached thereto and carrying a plurality of membranes 16 and fastening devices 26 thereon, terminates at the base. The function of the fastening devices is covered in a copending application, entitled "Membranous Covering for Structural Devices, and Fastening Means Therefor," Serial No. 790,991. FIG. 4 depicts the attachment and support of the hub portion at the base. Thirdly, membranes 16 carried by members terminate at the base. FIG. 5 depicts the attachment of membranes to the base.

Referring now to FIG. 3, there is shown the member 22 attached at one end thereof to a hub 24 by means of an arrowhead adapter 30 secured to the member and to the hub at one end thereof by two bolts, nuts, and washers 32 and 34 and secured to the other end thereof by bolts, nuts, and washers 36 and 38. A circular bushing 40 is provided in mating openings between the arrowhead portion of the adapter and the hub to prevent shearing of the bolt 34 under attendant forces. A circular metal cap 42 and an extension ring 43 attached thereto and including a sealing gasket (not shown) therein are provided for covering the hub to maintain the interior of the building dry. The manner in which members are attached to hubs and interlocked in fabricating the framework is disclosed in a copending application, entitled, "Terminal Fittings and Interlocking Devices," Serial No. 790,992. The other end of the member is attached to a base plate 44, which is mounted on the base 12 and attached thereto by a plurality of bolts, nuts and washers 46. The member may conveniently have a longitudinal opening 48 provided in a surface thereof to admit a portion of a metal gusset 50 or brace for supporting the framework rigidly at points along the base thereof where a member terminates at an angle. Metal gussets 52, 54 and 56 (not shown) are also provided for securing the member in place. All gussets are welded to the base plate 44 and to the member to provide rigid support.

Referring now to FIG. 4, there is shown the hub portion 28, attached at one end thereof by means of an arrowhead adapter 30 to a member 22, and attached at the other end to a base plate 60. The base plate is secured to the base by a plurality of bolts, nuts and washers 62 in openings 64 provided for said bolts. Two bolts, nuts and washers 32 and 34 are provided for securing the adapter to the hub and to the member. The other end of the adapter is secured to the member in the manner mentioned previously. The circular bushing 40 is also provided to prevent shearing of the bolt 34 as aforementioned.

Two metal gussets 66 and 68 (not shown) are provided for securing the hub portion 28 to the base plate. The gussets are positioned in spaced relation to each other and are welded to the hub portion and to the base plate. Additionally, the end of the hub portion is welded

4

to the base plate. A metal band 70 is also provided for enclosing the hub portion at the base. The band is semi-circularly shaped and is secured to the hub portion, the gussets, and to the base plate across one end of said gussets. A plurality of threaded spaced openings (not shown) are provided in a surface of the band for attaching a modified cap 72, extension ring 74, and sealing gasket 76 over the hub portion to maintain the interior of the building dry. A plurality of spaced openings (not shown) are provided in the cap 72 which mate with the openings in the band. Similarly, a plurality of spaced openings (not shown) are provided in the extension ring 74 which mate with the openings in the band. Bolts and nuts 78 are inserted into the openings in the cap and the extension ring for securing them and the gasket held therein to the band to enclose the hub portion.

Referring now to FIG. 5, there is shown the means for attaching and securing membranes terminating at the base. An angle bar 84 is provided to which the end of a membrane is attached. A plurality of spaced and mating openings 86 are provided in the membrane along one side thereof and in one end of the angle bar 84. Bolts, nuts and washers 88 are secured in said openings for securing the membrane in place. Another portion of the angle bar is attached to the base by a plurality of bolts, nuts and washers 90 in spaced openings in the base and angle bar. In this manner membranes are secured and the building is maintained dry along such a segment of said building.

The manner and means previously described for attaching a portion of the base of the building to the base is repeated in the same manner over other portions of the building. Additionally, hub portions and members occurring at the base of the framework may be secured to the base in the aforementioned manner for fabricating a framework initially from the base to the crown thereof, rather than by fabricating the framework around a centrally located tower, and then, attaching the base plane of the framework to the base.

Having described the principles of the present invention with reference to an embodiment utilizing the present invention, it is desired that the scope of the present invention not be limited by the size, shape, or materials selected for fabricating a building comprised of interconnected structural members and enclosing membranes as other embodiments will suggest themselves to persons skilled in the prior art. Accordingly, it is desired that the scope of the present invention be interpreted by the appended claims.

What is claimed is:

1. Anchoring means for a structural assembly of metallic links, metallic junction hubs, and non-metallic membranes, said anchoring means including a flat-surfaced foundation, against which foundation said links and junction hubs terminate in oblique angular relationship thereto, triangular metallic gusset means having horizontal and oblique edges abutting said foundation and hub surfaces, respectively, rectangular metallic gusset means integrated with said foundation and having interlocking joinder with slotted sections of said links, and metallic angle bar means securing said membranes to said foundation.

2. In combination with a metallic foundation plate and an obliquely disposed metallic circular hub having a series of metallic structural links secured thereto at spaced points about the circumference of said hub, means for fastening said hub to said foundation plate, said means comprising a metallic triangular gusset having an oblique edge secured to said hub and a horizontally disposed edge secured to said foundation plate.

3. In combination with a metallic foundation plate and a metallic structural link obliquely directed toward said foundation plate, said link having slotted areas extending to the plane of said plate, and fastening means for joining said link to said plate, said fastening means com-

5

prising anchoring metallic gussets fitting within said slotted areas and integrated with said foundation plate.

2,731,055
2,808,137

6

Smith ----- Jan. 17, 1956
Lewis ----- Oct. 1, 1957

References Cited in the file of this patent

UNITED STATES PATENTS

1,760,956 Moss ----- June 3, 1930
2,292,078 Inman et al. ----- Aug. 4, 1942
2,682,235 Fuller ----- June 29, 1954

5

Publication from "Parade" in Washington Post and Times Herald, page 19, May 2, 1954.
"Modern Plastics" Magazine; February 1955 issue, page 86 relied on.

OTHER REFERENCES