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Mission configurable shelter with electromagnetic interference (EMI) protection

Abstract

A portable shelter with electromagnetic interference (EMI) protection includes a plurality of walls that define an interior space. The walls can be fixed or movable. An EMI protected edge connector joins at least two of the walls together. The EMI protected edge connector assembly can be fixed or hinged. The edge connector can include a metallic outer edge member with two legs and a separate metallic inner edge member with two legs to define an edge channel therebetween with: (i) the first outer leg and the first inner leg are arranged parallel and spaced-apart relative to each other; and (ii) the second outer leg and the second inner leg arranged parallel and spaced-apart relative to each other. The shelter walls can include an inner surface covered by a metallic foil inner layer. A first wall panel is received in a first portion of the edge channel with its metallic foil inner layer contacting the inner edge member and a second wall panel is received in a second portion of the edge channel with it metallic foil inner layer contacting the inner edge member.

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Background/Summary

CROSS-REFERENCE TO RELATED APPLICATION (1) This application claims priority from and benefit of the filing date of U.S. provisional application Ser. No. 63/222,204 filed Jul. 15,

2021, and the entire disclosure of said provisional application is hereby expressly incorporated by reference into the present specification.

ACKNOWLEDGMENT OF SUPPORT AND DISCLAIMER
(1) This material is based upon work supported by the Army Contracting Command Warren under Contract No W56HZV19C0174. Any opinions, findings and conclusions or recommendations expressed in this material are those of the author(s) and do not necessarily reflect the views of the Government.

BACKGROUND INFORMATION

(2) Portable shelters or containers for transportation to and deployment at a remote site are widely known. These shelters/containers are sometimes referred to as mission configurable shelters and are used by the military and others for establishing field offices, field hospitals, barracks, combat shelters, kitchens, mess halls, command posts, disaster relief shelters, decontamination stations, holding cells, communication centers, laboratories, schools, and the like. Portable shelters can be a fixed size or can include one or more expandable and collapsible wall sections that allow the shelter to be selectively collapsed for storage and transportation of the shelter and that can be selectively expanded for deployment of the shelter.

(3) In certain applications, such portable shelters must provide protection against incoming and outgoing electromagnetic interference (EMI) energy. In the modem era, the use of sensitive electronic systems has become very important for industrial, commercial, and military applications. Electronic systems emit electromagnetic signals, and the electrical equipment is susceptible to interference from such emissions. Thus, EMI is a growing risk and an issue when numerous electronic systems are in close proximity to each other, as their emissions can interfere with each other, causing damage to the systems or improper operation. Furthermore, EMI is produced by electrical systems such as power transmission lines and even cell towers. Because of the widespread use of power lines and various other EMI emitting devices, EMI is a growing problem for electronic equipment.

(4) Cyber security of electronic equipment is also a growing problem due to bad actors intercepting electromagnetic signals from such equipment as a means to obtain information that was intended to be secure and, thus, steal the information or spy on the transmission of such information. In addition, bad actors can generate and transmit EMI with the intent to destroy or damage important electronic equipment and/or jam important signals being transmitted. Thus, a shelter or container which provides proper EMI protection would be very useful for both industrial and military applications.

SUMMARY

(5) In accordance with one aspect of the present development, a portable shelter with electromagnetic interference (EMI) protection includes a plurality of walls that are interconnected to define an interior space. At least one EMI protected edge connector assembly joins two of the walls together and includes a metallic outer edge member with first and second outer legs arranged transversely to define an outer corner and also a metallic inner edge member with first and second inner legs arranged transversely to define an inner corner. The outer and inner edge members are arranged in an aligned, spaced-apart arrangement to define an edge channel therebetween. The outer and inner edge members arranged such that: (i) the first outer leg and the first inner leg are arranged parallel and spaced-apart relative to each other; and (ii) the second outer leg and the second inner leg are arranged parallel and spaced-apart relative to each other. The plurality of walls include first and second wall panels each having an inner surface covered by a metallic foil inner layer. The first wall panel is closely received in a first portion of the edge channel, with the metallic foil inner layer of the first wall panel in contact with and electrically connected to the first inner leg of the inner edge member. The second wall panel is closely received in a second portion of the edge channel that intersects the first portion of the edge channel, wherein the metallic foil inner layer of

the second wall panel is in contact with and electrically connected to the second inner leg of the inner edge member.
(6) In accordance with another aspect of the present development, a portable shelter with electromagnetic interference (EMI) protection includes a plurality of wall panels that are interconnected to define an interior space, wherein first and second ones of the wall panels are movable relative to each other between a stowed position and a deployed position. The first and second wall panels each include an inner surface having a metallic foil inner layer located thereon. A hinged EMI protected edge connector assembly movably joins the first and second wall panels together. The hinged EMI edge connector assembly includes a first panel edge connector connected to the first wall panel and in contact with and electrically connected to the metallic foil inner layer of the first wall panel. A second panel edge connector is connected to the second wall panel in contact with and electrically connected to the metallic foil inner layer of the second wall panel. A hinge pivotally connects the first panel edge connector to the second panel edge connector.

Description

BRIEF DESCRIPTION OF THE DRAWINGS
(1) FIG. **1** is an isometric view of a shelter with EMI protection provided in accordance with a first embodiment of the present disclosure.
(2) FIG. **2** is an isometric view of a shelter with EMI protection provided in accordance with a second embodiment of the present disclosure.
(3) FIG. **3** is an isometric view of an EMI protected edge connector assembly provided in accordance with a first embodiment of the present disclosure.
(4) FIG. **4** is a section view as taken at **4-4** of FIG. **3**.
(5) FIG. **5** is an isometric view of an EMI protected edge connector assembly provided in accordance with a second embodiment of the present disclosure;
(6) FIG. **6** is a section view of the EMI protected edge connector assembly of FIG. **5**.
DETAILED DESCRIPTION
(7) FIG. **1** illustrates a perspective view of a mission configurable portable container or shelter **10** with electromagnetic interference (EMI) protection according to a first embodiment of the present disclosure. The illustrated example of the shelter **10** is generally a rectangular cube structure that includes opposite parallel, spaced-apart end walls **12**,**14**, first and second parallel spaced-apart side walls **18** and **20**, as well as parallel spaced-apart top and bottom walls **24**,**26**. A portion of the wall **18** is broken away to reveal the interior envelope or space S defined by and between the walls **12**,**14**,**18**,**20**,**24**,**26**. An EMI protected door **16** may be located in one or both of the first and second end walls **12**,**14** or in another wall **18**,**20**,**24**,**26**. If desired, the shelter **10** may also include one or more EMI protected windows disposed in any one or more of the walls **12**,**14**,**18**,**20**,**24**,**26**. EMI protection for such windows can be achieved by, for example, employing a ballistic glass, i.e., an acrylic material which absorbs EMI. Each wall **12**,**14**,**18**,**20**,**24**,**26** of the shelter **10** is sometimes generally referred to herein as a wall W. The walls W are joined where they intersect along their edges by an EMI protected edge connector assembly **30**, provided in accordance with an embodiment of the present disclosure, which maintains the integrity of the EMI protected envelope or space S (see also FIG. **4**) defined between the walls W of the shelter **10**.
(8) FIG. **2** shows another embodiment of a mission configurable portable shelter **10′** with EMI protection according a second embodiment of the present disclosure. Unlike the shelter **10** of FIG. **1**, the portable shelter **10′** includes one or more movable or expandable wall sections **40** that are selectively deployed relative to a primary shelter base structure **42** by sliding, pivoting, relocation, and/or other movement to expand the size of the shelter **10′**. The movable wall sections **40** can be selectively stowed relative to the primary shelter base structure **42** by sliding, pivoting, relocation,

and/or other movement in directions opposite their respective deployment directions to reduce the size of the shelter **10′** for storage and/or transport. Similar to the shelter **10**, the movable wall sections **40** and base **42** of the shelter **10′** each include at least some of the end walls **12**,**14** side walls **18**,**20** and top and bottom walls **24**,**26** as described above in relation to the shelter **10**. These various walls **12**,**14**,**18**,**20**,**24**,**26** of the shelter **10′** are each sometimes generally referred to as a wall W and they can be joined together where they meet or abut by an EMI protected edge connector assembly **30** provided in accordance with an embodiment of the present disclosure. The walls W define an interior envelope or space S as described above in relation to the shelter **10** (a portion of the wall **18** is broken away to show the internal space S.

(9) With reference now to FIGS. **3** & **4**, the walls W of the shelter **10**,**10′** can each be made of a layered or sandwich-type composite material wall panel **80**. In one embodiment, the wall panel **80** comprises a core **82** such as a fiberglass composite panel core but other materials can be used. Adhered to at least an inner surface **82***a* of the panel core **82** is an inner layer **84***a* of metallic foil oriented toward the internal or enclosed space of the shelter **10**,**10′** defined between the walls W. In the illustrated embodiment, the opposite outer surface **82***b* of the panel core **82** includes an outer layer **84***b* of metallic foil that is oriented toward the exterior of the shelter **10**,**10′** outside of the walls W. Each foil layer **84** (**84***a*,**84***b*) is preferably co-extensive with the surface **82***a*,**82***b* of the panel core **82** to which it is applied. In one embodiment, the metal foil layers **84***a*,**84***b* (generally **84**) can be a thin layer or film made of a metallic foil material such as aluminum foil on the order of 0.010 inches (0.254 mm) in thickness. The thickness of the metal foil layer **84** can, in one embodiment, range between 0.005 inches and 0.020 inches (0.127 mm to 0.508 mm). The metal foil layer **84** may be adhered to the core **82** by a spray-on adhesive, a film adhesive, a roll-on adhesive, or any other suitable adhesive applied to at least one of the surfaces meant to be adhered and/or the foil layer **84** can be mechanically connected to the panel **82** by fasteners, clips, a frame, or the like. The metal foil material can comprise aluminum, steel, copper, stainless steel, or any other suitable metal foil that prevents transmission of EMI therethrough and that can conduct EMI energy currents to a ground path for dissipation/attenuation. While the foil layer **84** is relatively thin, it can be patched as necessary if someone inadvertently punctures or tears the foil layer **84**. Because the foil layer **84** is thin, it can better conform to the surface(s) **82***a*,**82***b* to which it is adhered/connected, as compared to relatively thicker metal layers, and its thin structure reduces weight. As noted, in the illustrated embodiment, at least the inner foil layer **84***a* is provided on each panel **80**, and both the inner and outer foil layers **84***a*,**84***b* can be provided. In an alternatively embodiment, only the outer foil layer **84***b* is provided on each panel **80**.

(10) If desired, at least part of the inner and/or outer layer **84***a*,**84***b* of foil **84** of at least one panel **80** can be covered on its exposed face with a protective layer or coating **90** of a durable, wear-resistant, water-proof material for protection from damage caused by equipment, foot traffic, cleaning liquids, and environmental contaminants. As described below, the protective covering layer **90** is omitted where the foil **84** must make a physical connection with the EMI protected edge connector **30** for electrical conduction between the foil **84** and the edge connector **30**. In the illustrated embodiment, at least some of the wall panels **80** comprise a protective layer **90** comprising a gelcoat layer which can be, e.g., an epoxy or unsaturated polyester resin thermoset polymer coating or similar gelcoat layer that forms a hard durable surface that resists wear, protects the foil layer **84**, and is non-permeable to water to allow for washing. The protective layer **90** can include a textured surface **92** to provide non-skid characteristics and can be tinted or coated with a desired color.

(11) In other embodiments, the core member **82** of the wall panel **80** may be made of other types of suitable materials, including one or more layers of different materials. These materials can include, e.g., fiber reinforced materials (carbon, aluminum or aramid fiber reinforced plastic materials), as well as thermally insulative materials such as rigid foam, or other materials such as corrugated non-metallic materials, wood, metal, and others. What is desirable for such wall panels is that they have

a high strength-to-weight ratio, provide corrosion resistance, have a high stiffness-to-weight ratio, are chemically inert, have a high durability potential and good rigidity. Regardless of their exact construction, the panels **80** each have an inner side or surface **80***x* oriented inwardly toward the interior enclosed space of the shelter **10**,**10**′ and an opposite outer side or surface **80***y* oriented outwardly away from the shelter **10**,**10**′.

(12) With continuing reference to FIGS. **3** & **4**, the EMI protected edge connector assembly **30** is shown as used to connect first and second wall panels **80** (**80***a*,**80***b*) together in an EMI-protected arrangement. The edge connector assembly **30** extends at least substantially coextensively along a joint J formed between the two abutted panels **80***a*,**80***b* but can be omitted where the joint J is otherwise protected such as by a metallic corner piece CP as shown in FIG. **1**. The edge connector assembly **30** comprises a first or outer edge member **32** and a second or inner edge member **34**. The outer and inner edge members **32**,**34** preferably each comprise a one-piece metallic member having an L-shaped profile defined from aluminum, steel or stainless steel or another electrically conductive metal. The outer edge member **32** includes first and second outer legs **32***a*,**32***b*, and the inner edge member **34** includes first and second inner legs **34***a*,**34***b*. The first and second outer legs **32***a*,**32***b* of the outer edge member **32** and the first and second inner legs **34***a*,**34***b* of the inner edge member are respectively arranged transversely relative to each other such as perpendicularly at a 90-degree angle to form respective outer and inner corners **32***c*,**34***c* that are right-angled in the illustrated embodiment. For each edge member **32**,**34**, the respective legs **32***a*,**32***b* or **34***a*,**34***b* thereof can be the same length or different lengths relative to each other, but assembly can be simplified if there are the same length relative to each other such that the edge member **32**,**34** can be installed in either first or second orientations without any consequence, i.e., the first and second legs can be interchangeable if the same length.

(13) The outer and inner edge members **32**,**34** are arranged in an aligned, spaced-apart arrangement with the respective first legs **32***a*,**34***a* being arranged parallel and spaced-apart relative to each other and with the respective second legs **32***b*,**34***b* being arranged parallel and spaced-apart relative to each other such that an L-shaped edge channel EC is defined between the outer and inner edge members **32**,**34**. The edge channel includes interconnected first and second portions ECa,ECb (FIG. **4**) defined respectively between the respective first legs **32***a*,**34***a* (for the first portion ECa) and between the respective second legs **32***b*,**34***b* (for the second portion ECb). The respective corners **32***c*,**34***c* can be aligned on a common reference plane that bisects or otherwise divides both 90-degree angles defined respectively by the legs **32***a*,**32***b* and legs **34***a*,**34***b*.

(14) The abutted walls panels **80***a*,**80***b* are perpendicularly oriented relative to each other. A first wall panel **80***a* is closely received in a first portion EC**1** of the edge channel EC with its inner foil layer **84***a* abutted and electrically connected with the inner edge member **34** such that an EMI electrical currents present in the inner foil layer **84***a* are conducted from the inner foil layer **84***a*, into and through the inner edge member **34** to a ground path. Similarly, the second wall panel **80***b* is closely received in a second portion EC**2** of the edge channel EC that perpendicularly connects with the first channel portion EC**1** with the inner foil layer **84***a* of the panel **80***b* abutted and electrically connected with the inner edge member **34** such that an EMI electrical currents present in the inner foil layer **84***a* are conducted from the inner foil layer **84***a*, into and through the inner edge member **34** to a ground path. The perpendicularly oriented wall panels **80***a*,**80***b* are preferably abutted in a butt joint arrangement as shown with a transverse end or butt of one panel **80***a*,**80***b* abutted with the inner surface **80***x* of the other panel such that the edge channel is filled by the two panels **80***a*,**80***b* with no air gaps. The inner edge member **34** bridges the EMI currents from the inner foil layer **84***a* of one panel **80***a*,**80***b* to the inner foil layer **84***a* of the other **80***a*,**80***b* for conduction to a ground path electrically connected to one of the inner edge members **34** or elsewhere. If the panels **80***a*,**80***b* include an outer foil layer **84***b* (as shown in the illustrated embodiment), the respective outer foil layers **84***b* thereof are abutted with and electrically connected to the outer edge member **32**. The outer edge member **32** bridges the EMI currents from

the outer foil layer **84***b* of one panel **80***a*,**80***b* to the outer foil layer **84***b* of the other panel **80***a*,**80***b* for conduction to a ground path electrically connected to one of the outer edge members **32** or elsewhere.

(15) The outer and inner edge members **32**,**34** can each be connected to the panels **80** using fasteners F such as rivets, screws, bolts, clips, and/or any other suitable fasteners that engage the outer and/or inner edge member **32**,**34** and the panel **80** such that a first plurality of fasteners F engage and connect the outer edge member **32** and the panel **80** and a second plurality of fasteners F engage and connect the inner edge member **34** and the panel **80**. Adhesive may be applied at the joint J where the panels **80** are abutted provided that the adhesive is applied in a manner that does not prevent electrical conductivity between the inner foil layers **84***a* and the inner edge member **34** or between the outer foil layers **84***b* and the outer edge member **32**. As noted above, if a gelcoat or other protective covering layer **90** is provided on the inner foil layer **84***a*, the coating **90** omitted from at least the part of the panel **80** located in the edge channel EC to ensure a good electrically conductive connection between the foil layer **84***a* and the inner edge member **34**. Likewise, if the outer foil layer **84***b* is provided and includes a gelcoat or other protective covering layer **90**, the coating **90** is omitted from at least the part of the panel **80** located in the edge channel EC to ensure a good electrically conductive connection between the foil layer **84***b* and the outer edge member **32**.

(16) The disclosed edge connector assembly **30**, in which the outer and inner edge members **32**,**34** are separate pieces that can be moved toward and away from each other during assembly to alter the width of the edge channel EC defined therebetween, ensures that when the first and second walls panels **80** are operably connected together as shown in FIGS. **3** & **4**, the edge connector members **32**,**34** are respectively firmly abutted with the outer and inner sides **80***y*,**80***x* of the panels **80** and electrically connected to the foil layer **84***a* (and the optional outer file layer **84***b* if present) such that the panels **80** are tightly gripped between the edge members **32**,**34** and immovably held in such position by the fasteners F. This structure for the edge connector assembly **30** in which the outer and inner edge members **32**,**34** are separate can be advantageous as compared to an edge connector assembly in which the edge channel EC is a fixed width that can lead to undesired gaps being defined between the foil layers **84***a*,**84***b* and the edge connector assembly due to tolerances which can interfere with electrical conductivity.

(17) As noted above, in some embodiments, an EMI protected shelter **10**,**10**′ provided in accordance with the present disclosure can include wall panels **80** that move relative to each other to deploy or stow the shelter **10**,**10**′. In one such embodiment as shown in FIGS. **5** & **6**, first and second wall panels **80***a*,**80***b* are pivotally connected together and pivot relative to each other about a pivot axis PX. This arrangement can be provided in an EMI protected manner using a hinged EMI protected edge connector assembly **30**′. The hinged connector assembly **30**′ comprises a first panel edge connector **132** connected to a first wall panel **80***a*, a second panel edge connector **134** connected to a second wall panel **80***b*, and a hinge **136** that pivotally connects the first panel edge connector **132** to the second panel edge connector **134** for pivoting or rotational movement of the panel edge connectors **132**,**134** and wall panels **80***a*,**80***b* relative to each other about the pivot axis PX.

(18) The hinge **136** can comprise, for example, a first hinge portion or leaf **136***a* connected to the first panel edge connector **132**, a second hinge portion or leaf **136***b* connected to the second panel edge connector **134**, and a pivot pin **136***c* that is installed through a plurality of aligned apertures of the first and second hinge portions/leaves **136***a*,**136***b* to pivotally interconnect the first and second hinge portions **136***a*,**136***b* for pivoting movement about the pivot axis PX defined by the pivot pin **136***c*.

(19) The first panel edge connector **132** comprises a first open U-shaped channel EC**1** in which a butt edge **80***e* of the first panel **80***a* is located and retained. Likewise, the second panel edge connector **134** comprises a second open U-shaped channel EC**2** in which a butt edge **80***e* of the

second panel **80***b* is located and retained. More particularly, the first and second panel edge connectors **132**,**143** each comprise outer (first) an inner (second) panel edge members **142**,**144** that are separate interconnected to define the respective U-shaped channels EC**1**,EC**2** that are adapted to receive a respective edge of the wall panels **80***a*,**80***b*. In the illustrated embodiment, the outer and inner edge members **142**,**144** preferably each comprise a one-piece metal member or bracket with an L-shaped profile defined from aluminum, steel or stainless steel or another electrically conductive metal including first and second legs **142***a*,**142***b* (for the outer edge member **142**) and **144***a*,**144***b* (for the inner edge member **144**) arranged at a 90-degree angle. For each edge member **142**,**144**, the respective legs **142***a*,**142***b* or **144***a*,**144***b* thereof can be the same length or different lengths relative to each other, but assembly can be simplified if there are the same length relative to each other such that the edge member **142**,**144** can be installed in either first or second orientations without any consequence.

(20) For each panel edge connector **132**,**134**, the outer and inner edge members **142**,**144** thereof are arranged in an opposed facing arrangement with their respective second legs **142***b*,**144***b* overlapped and their respective first legs **142***a*,**144***a* arranged in a parallel spaced-apart facing relationship to define the respective channels EC**1**,EC**2** and receive an edge **80***e* of a respective panel **80***a*,**80***b* therebetween. For each panel edge connector **132**,**134**, the first leg **142***a* of the outer edge member **142** is in contact with and electrically connected to the outer foil layer **84***b* (if provided) of the panel **80** and the first leg **144***a* of the inner edge member **144** is in contact with and electrically connected to the inner foil layer **84***a* of the panel **80**.

(21) During assembly, the outer and inner edge members **142**,**144** can be moved toward each other and firmly abutted with the panel **80***a*,**80***b* to ensure firm contact and a good electrical connection between the edge members **142**,**144** and the foil layer(s) **84***b*,**84***a*. The outer and inner edge members **142**,**144** can be fixedly secured to the panel **80** by a plurality of rivets, screws, or other fasteners F that extend through their respective first legs **142***a*,**144***a* and second legs **142***b*,**144***b* and into the panel **80**. Some of the fasteners F also extend through and are used to secure the first and second hinge portions **136***a*,**136***b* to the respective panels **80***a*,**80***b* (as shown only for the first hinge portion **136***a* in FIG. **6** to simplify the drawing).

(22) With particular reference to FIG. **6**, in some embodiments, a thermal gasket K**1** such as a rubber membrane or similar thermally non-conductive gasket is installed between the respective second legs **142***b*,**144***b* of the outer and inner edge members **142**,**144** to provide a thermal break that interrupts a thermal pathway between the inner and outer edge members **142**,**144**. Similarly, a hinge protection gasket K**2** can surround the hinge **136** and cover or wrap the first and second hinge portions **136***a*,**136***b* to prevent light, air, sand, and contaminants from passing through gaps in the hinge **136**. Because such a hinge protection gasket K**2** can interrupt electrical continuity between the first and second panel edge connectors **132**,**134** through the hinge **136**, the hinged panel connector assembly **30**′ further comprises an electrical bridge or bridge member **160** such an EMI metal mesh gasket that is adhesively and/or mechanically secured via fasteners or the like (and also electrically connected) to one of the first and second panel edge connectors **132**,**134** (such as the first panel edge connector **132** in the illustrated embodiment) and that contacts and electrically connects with the other of the first and second panel edge connectors **132**,**134** (the second panel edge connector **134** in the illustrated embodiment) when the first and second panels **80***a*,**80***b* are arranged in their deployed operative positions to provide electrical continuity and an electrical pathway between the first and second panel edge connectors **132**,**143** across the hinge **136**. In the illustrated example, the mesh metal gasket or other electrical bridge member **160** is adhesively and/or mechanically secured via fasteners or the like (and also electrically connected) to the inner edge member **144** of one of the first and second panel edge connectors **132**,**134** (such as the first panel edge connector **132** in the illustrated embodiment) and contacts and electrically connects with the inner edge member **144** of the other of the first and second panel edge connectors **132**,**134** (the second panel edge connector **134** in the illustrated embodiment) when the first and

second panels **80***a*,**80***b* are arranged in their deployed operative positions (such as the illustrated 90-degree arrangement of the panels **80***a*,**80***b* as shown in FIG. **6**) to provide an electrical pathway or bridge for EMI currents to bypass the hinge **136** and flow directly between the first and second panel edge connectors **132**,**134** and between at least the inner foil layers **84***a* respectively engaged with the edge connectors **132**,**134** through the mesh gasket **160** or other electrical bridge member **160** such that such EMI currents can be conducted to a ground path for dissipation. In this manner, the electrical bridge member **160** electrically connects and provides electrical continuity between the first and second panel edge connectors **132**,**134** at least when the first and second panels **80***a*,**80***b* are arranged in the deployed position relative to each other.

(23) EMI metal mesh gaskets **160** are available in various cross sections to accommodate many different attenuation and mounting requirements encountered in EMI shielding applications. Thus, for example, the gaskets **160** can be rectangular, round, oval, round with a fin or double round in order to ensure that enclosures or other equipment will be RF sealed appropriately. In one embodiment, the gaskets **160** can be made of a knitted wire mesh with the material of the gaskets being made of, for example, a nickel-copper alloy, such as Monel, a ferrous alloy, such as a tin-steel combination or a beryllium copper alloy. Various materials for the mesh gasket are more or less effective in shielding. For example, attenuation levels up to 60 dB or perhaps even up to 120 dB at some frequencies are possible with wire mesh gaskets.

(24) In the preceding specification, various embodiments have been described with reference to the accompanying drawings. It will, however, be evident that various modifications and changes may be made thereto, and additional embodiments may be implemented, without departing from the broader scope of the invention as set forth in the claims that follow. The specification and drawings are accordingly to be regarded in an illustrative rather than restrictive sense.

Claims

1. A portable shelter with electromagnetic interference (EMI) protection, said shelter comprising: a plurality of walls that are interconnected to define an interior space; at least one EMI protected edge connector assembly that joins two of said walls together, said at least one EMI edge connector assembly comprising: a metallic outer edge member comprising first and second outer legs arranged transversely to define an outer corner; a metallic inner edge member comprising first and second inner legs arranged transversely to define an inner corner; said outer and inner edge members arranged in an aligned, spaced-apart arrangement to define an edge channel therebetween, said outer and inner edge members arranged such that: (i) the first outer leg and the first inner leg are arranged parallel and spaced-apart relative to each other; and (ii) the second outer leg and the second inner leg are arranged parallel and spaced-apart relative to each other; wherein said plurality of walls comprise first and second wall panels each comprising an inner surface covered by a metallic foil inner layer; said first wall panel closely received in a first portion of said edge channel, wherein said metallic foil inner layer of said first wall panel is in contact with and electrically connected to said first inner leg of said inner edge member; said second wall panel closely received in a second portion of said edge channel that intersects said first portion of said edge channel, wherein said metallic foil inner layer of said second wall panel is in contact with and electrically connected to said second inner leg of said inner edge member; wherein said metallic inner edge member of said at least one EMI protected edge connector assembly electrically connects the metallic foil inner layer of one of the first and second wall panels to the metallic foil inner layer of the other of the first and second wall panels and conducts EMI currents present in the metallic foil inner layer of said one of the first and second wall panels to the metallic foil inner layer of the other of the first and second wall panels for conduction of said EMI currents to a ground path electrically connected to said inner edge member.

2. The portable shelter as set forth in claim 1, wherein said outer and inner edge members are L-

shaped in profile and wherein said edge channel defined between said outer and inner edge members is L-shaped.

3. The portable shelter as set forth in claim 1, wherein said outer edge member and said inner edge member are separate structures that are arranged relative to each other to tightly grip said first and second wall panels therebetween.

4. The portable shelter as set forth in claim 3, wherein said outer edge member is connected to the first and second panels by a first plurality of fasteners, and wherein said inner edge member is connected to the first and second panels by a second plurality of fasteners.

5. The portable shelter as set forth in claim 3, wherein said metallic foil inner layer of both said first wall panel and said second wall panel comprises a thickness in the range of 0.005 inches to 0.020 inches.

6. The portable shelter as set forth in claim 5, wherein said metallic foil inner layer of both said first and second wall panels comprises aluminum foil.

7. The portable shelter as set forth in claim 6, wherein said first and second panels each further comprise an outer surface covered by a metallic foil outer layer.

8. The portable shelter as set forth in claim 7, wherein said metallic foil outer layer comprises aluminum foil having a thickness in the range of 0.005 inches to 0.020 inches.

9. The portable shelter as set forth in claim 6, wherein each of said first and second wall panels each comprises a fiberglass composite core.

10. The portable shelter as set forth in claim 9, wherein at least part of said metallic foil inner layer of at least one of said first and second panels comprises a gelcoat protective covering.