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(54) AIR CONDITIONED TENT ASSEMBLY

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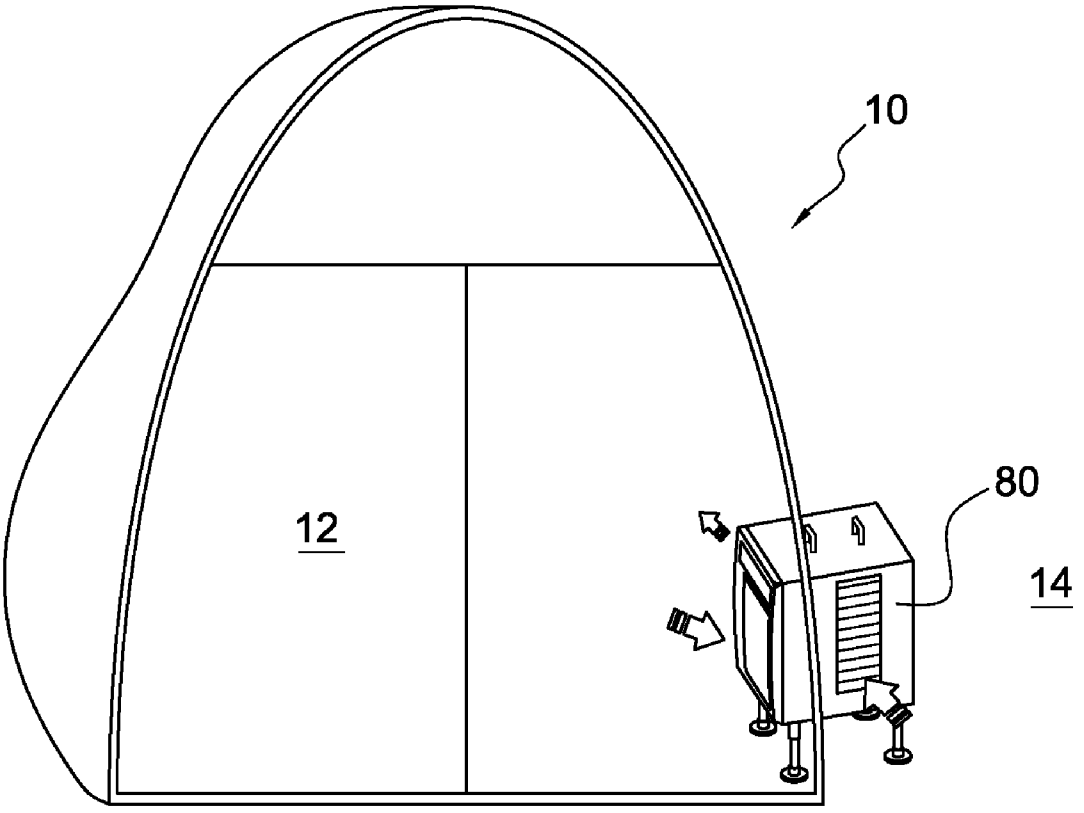
(57) **ABSTRACT**

A tent assembly is provided wherein an air conditioner is operably engaged with the tent to allow selective cooling of an interior of the tent. The tent includes a sealing sleeve to seal about a periphery of the air conditioner, so that the air conditioner exhausts to the ambient environment.



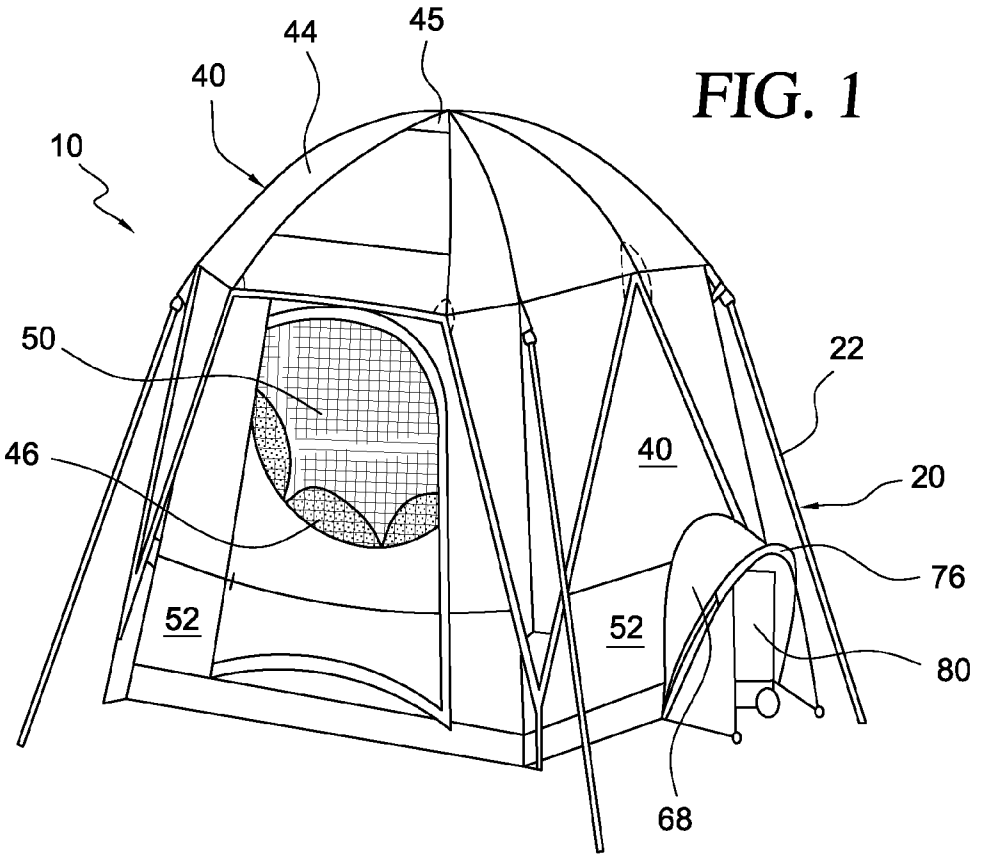


FIG. 1

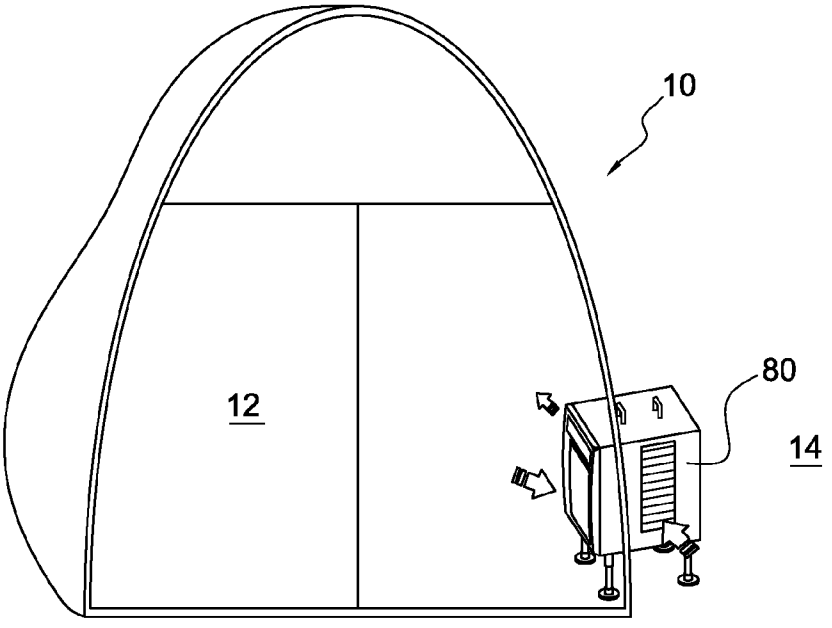


FIG. 2

FIG. 3

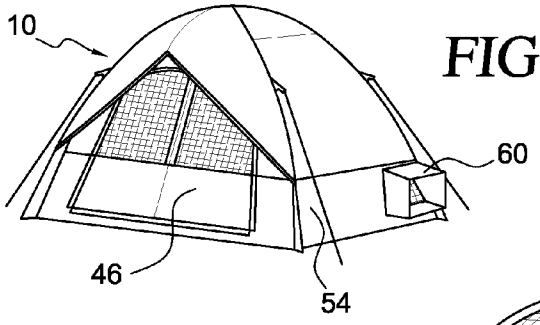


FIG. 4

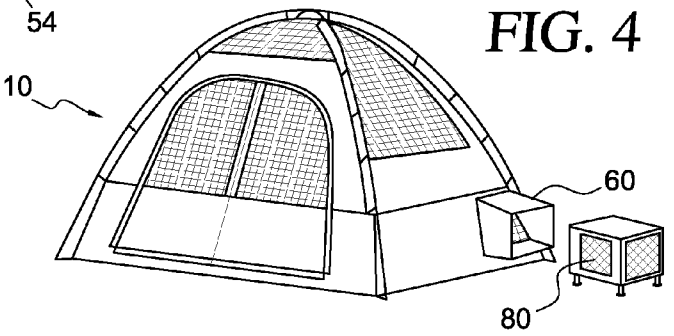


FIG. 5

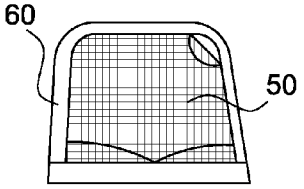


FIG. 6

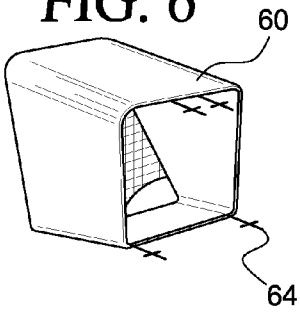


FIG. 7

FIG. 8

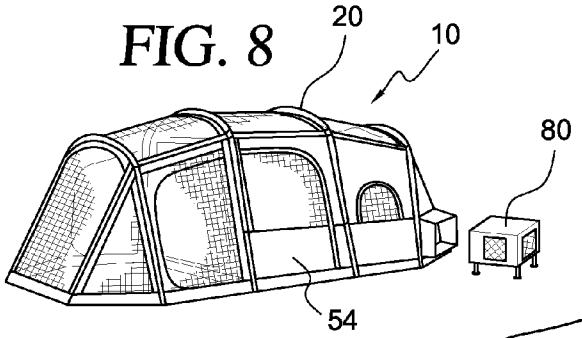
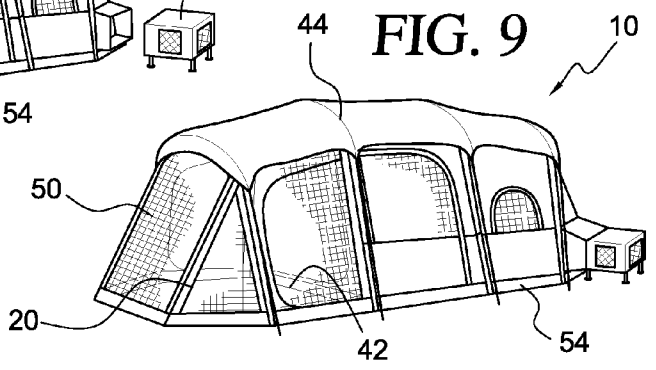


FIG. 9



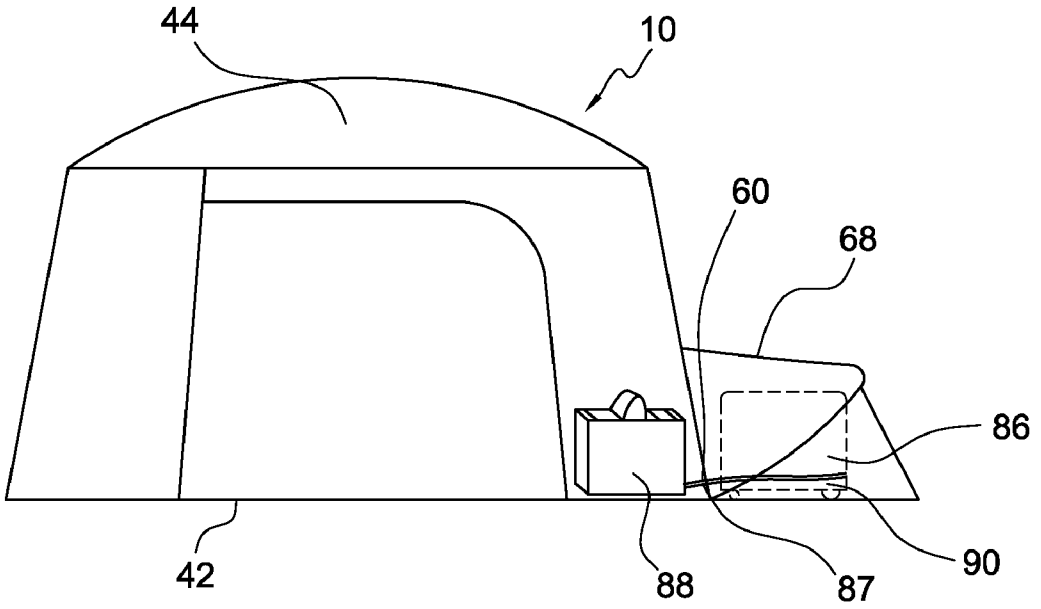


FIG. 10

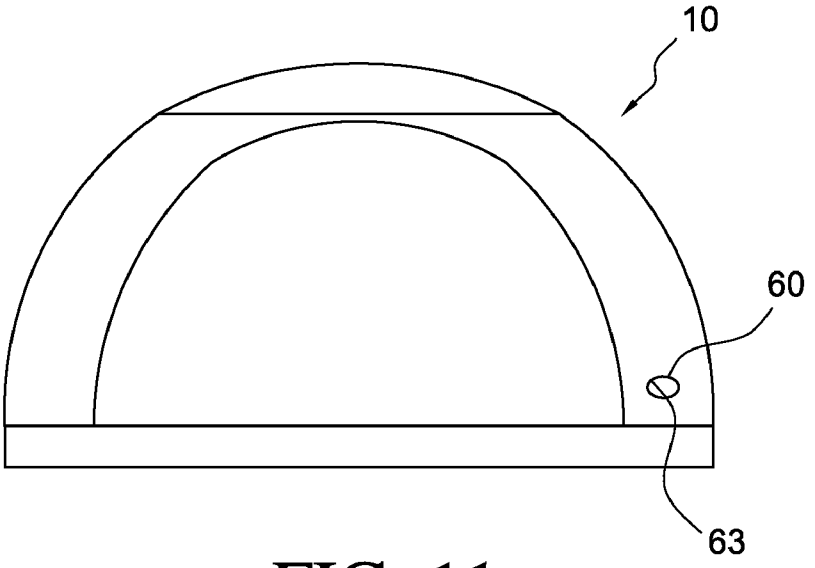
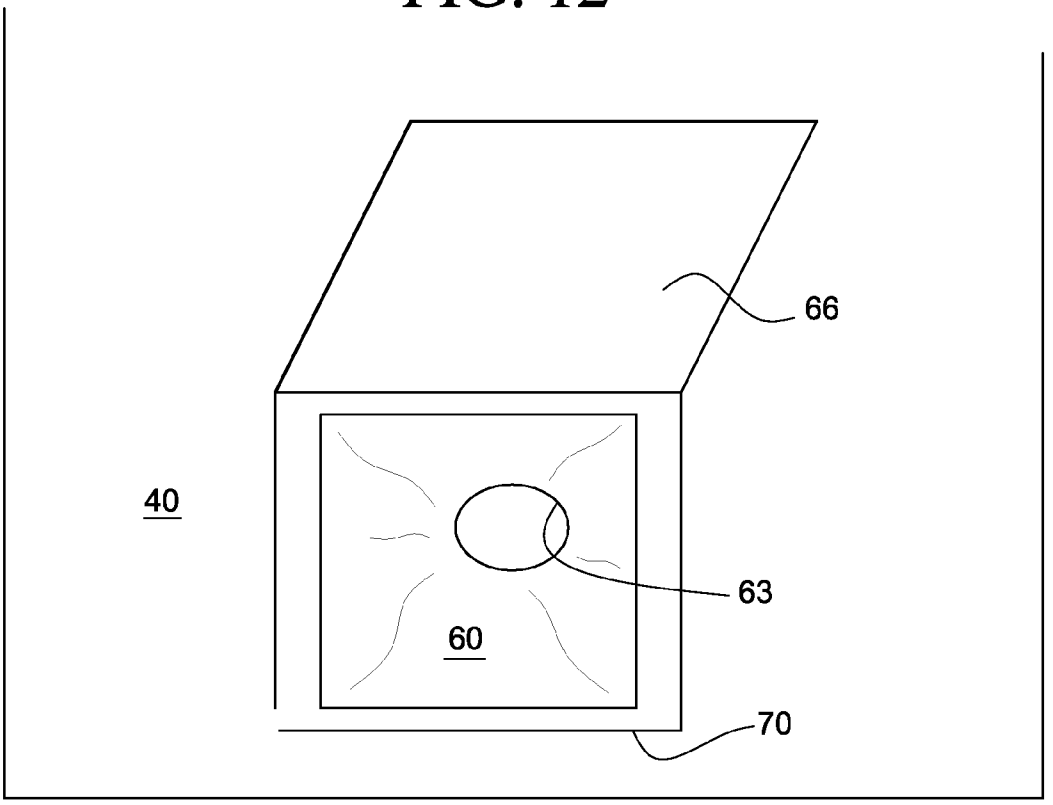


FIG. 11

FIG. 12



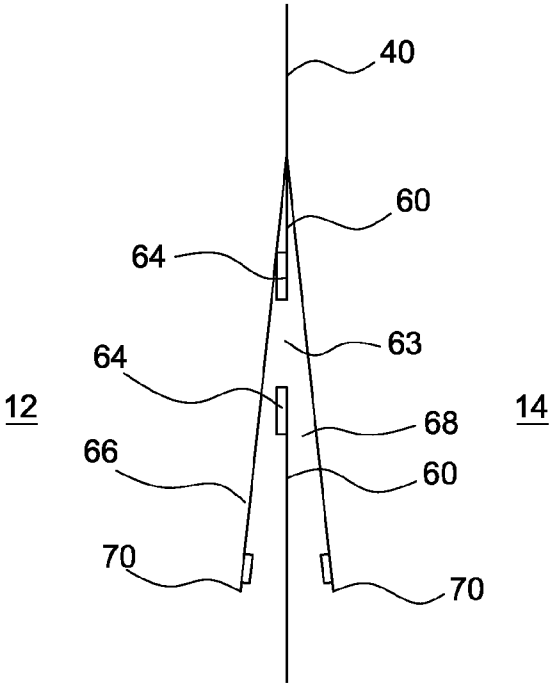


FIG. 13

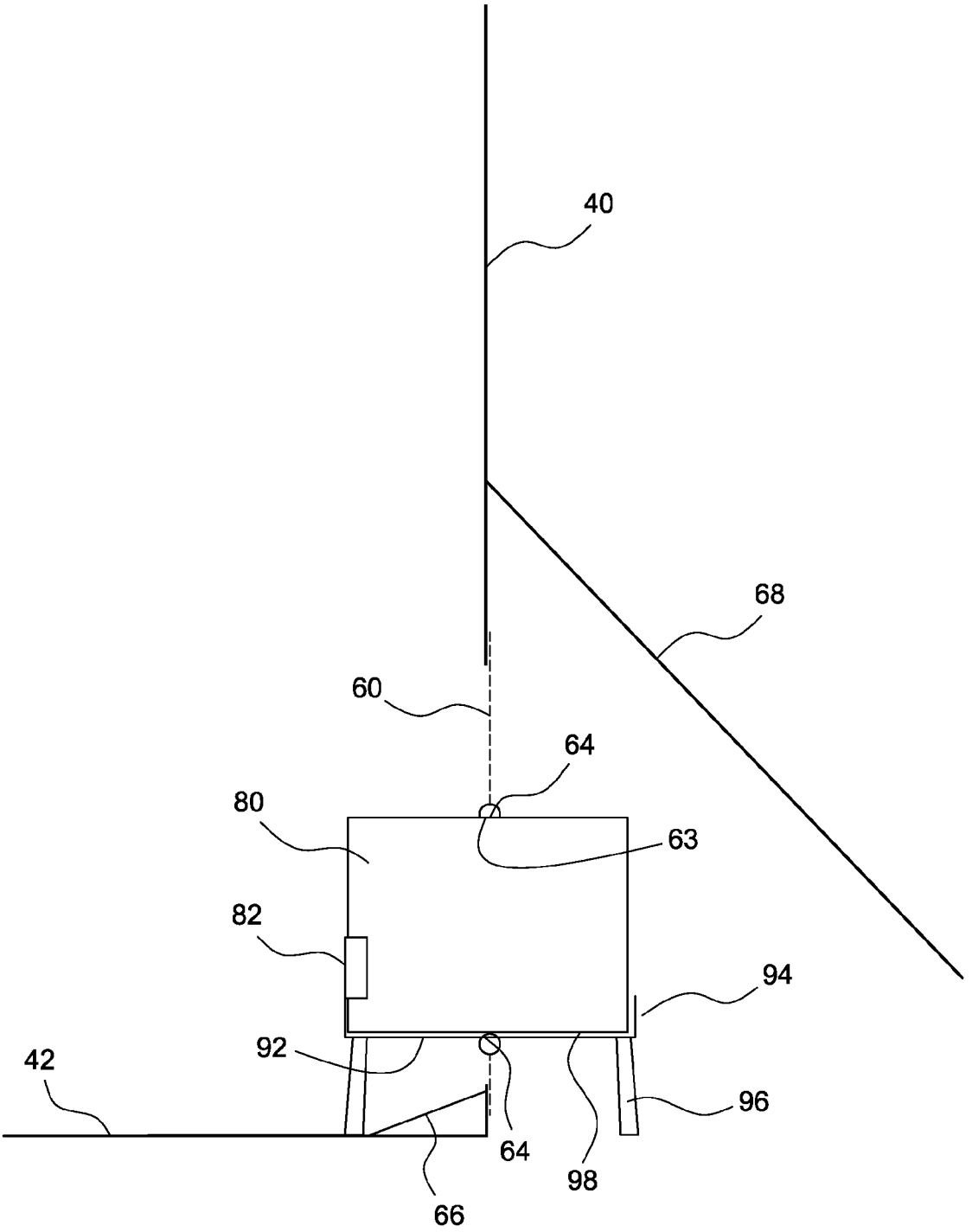


FIG. 14

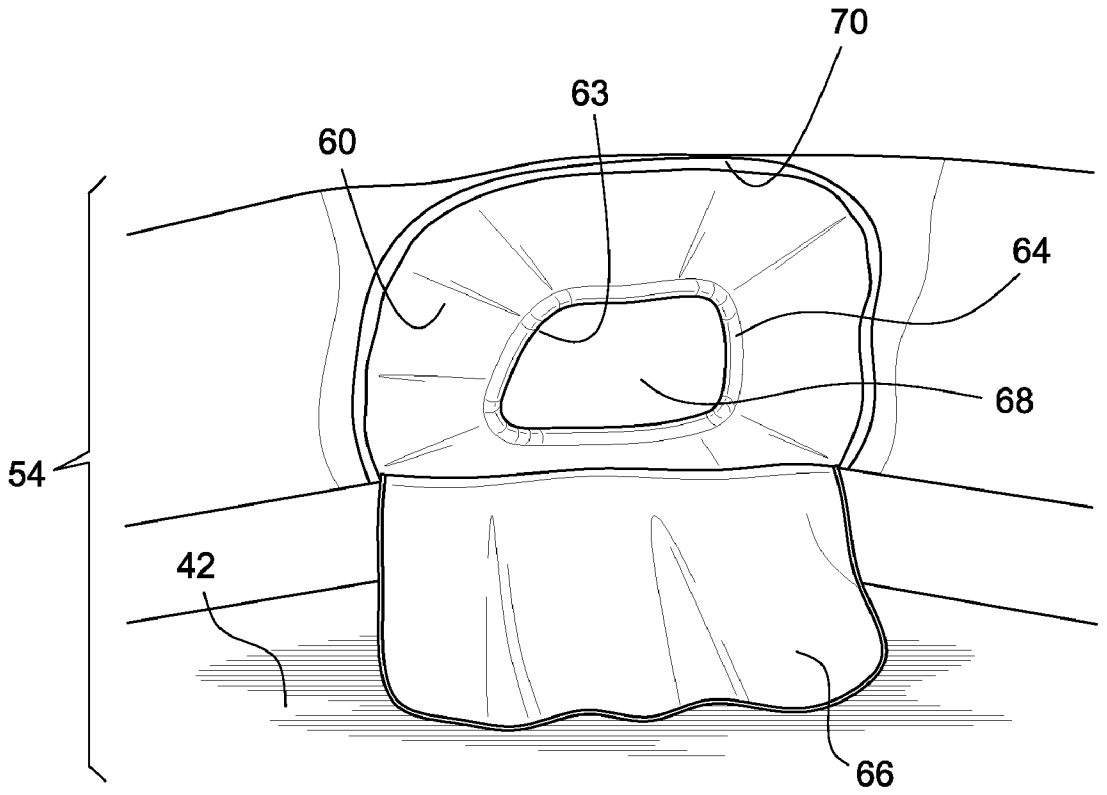


FIG. 15

AIR CONDITIONED TENT ASSEMBLY

BACKGROUND OF THE INVENTION

[0001] 1. Field of the Invention

[0002] The present invention relates to camping equipment and more particularly, to an air conditioned tent for permitting user control of a temperature inside the tent.

[0003] 2. Description of Related Art Including Disclosed Under 37 CFR 1.97 and 1.98

[0004] Although camping is an opportunity to more closely experience the natural environment, environmental conditions can reduce the pleasures of the camping experience. For example, when camping in relatively hot conditions, even though the tent may provide shade from the sun, the ambient heat cannot be escaped. Excessive ambient heat can significantly diminish the camping experience. In fact, excessive heat restricts the opportunity of many to enjoy the camping experience.

[0005] If one is camping near a motor vehicle, brief escapes can be made by utilizing the air conditioning of the vehicle. However, the compressor of such air conditioning unit is directly connected to the engine of the vehicle. Thus, the vehicle must be running in order to run the air conditioner unit. Such continual operation of the vehicle engine can significantly reduce the camping experience, as well as create undesired exhaust and fuel consumption.

[0006] The need exists for a tent assembly which allows for active climate control within the tent, thereby increasing the available ambient environments in which the tent can be enjoyably occupied. The need further exists for tent assembly that can cooperatively engage an air conditioner to allow effective regulation of the temperature inside a tent.

BRIEF SUMMARY OF THE INVENTION

[0007] The present disclosure provides a tent assembly, having an erectable frame moveable between a collapsed configuration and an upright configuration; a shell connected to the frame, the shell having a floor and side walls, wherein one of the side walls includes a sealing sleeve having an adjustable port configurable between a restricted diameter and an expanded diameter, an internal flap movable between a closed position occluding the port and an open position exposing the port; and an air conditioner located within the sealing sleeve, wherein the adjustable port is sized to be adjacent the air conditioner.

[0008] In a further configuration, the tent assembly includes an exterior flap extending from the shell, the exterior flap movable between a closed position occluding the port and an open position spaced from the port.

[0009] The present system also provides a method of regulating a temperature in a tent assembly by disposing an air conditioner within a sealing sleeve in a wall of a tent shell; adjusting the sealing sleeve to seal about a periphery of the air conditioner; and operating the air conditioner to introduce cooled air into the tent.

BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWING(S)

[0010] FIG. **1** is a perspective view of the assembly of a tent and an air conditioner.

[0011] FIG. **2** is a schematic representation of a tent and an air conditioner.

[0012] FIG. **3** is a perspective view of a further configuration of a tent for cooperatively engaging an air conditioner.

[0013] FIG. **4** is a perspective view of another configuration of a tent and an air conditioner, prior to operative engagement.

[0014] FIG. **5** is a front elevational view of a sealing sleeve and screened port.

[0015] FIG. **6** is a perspective view of the sealing sleeve of FIG. **5**.

[0016] FIG. **7** is a perspective view of the tent and air conditioner of FIG. **4**.

[0017] FIG. **8** is a perspective view of an additional configuration of a tent and an air conditioner, prior to operative engagement.

[0018] FIG. **9** is a perspective view of the tent and air conditioner of FIG. **8**.

[0019] FIG. **10** is a side schematic view of an alternative installation of the tent and an internal unit-external unit air conditioner.

[0020] FIG. **11** is a side schematic view of an alternative configuration of the tent for the internal unit-external unit air conditioner of FIG. **10**.

[0021] FIG. **12** is a schematic view of the sealing sleeve as seen from the interior of the tent.

[0022] FIG. **13** is side schematic view of the tent shell showing the internal flap, the sealing sleeve and the exterior flap.

[0023] FIG. **14** is a side schematic view of an air conditioner operably located relative to the tent.

[0024] FIG. **15** is an elevational view of the sealing sleeve from an interior of the tent.

DETAILED DESCRIPTION OF THE INVENTION

[0025] Referring to FIGS. **1**, **2**, **4**, **7-10** and **14**, the present assembly includes a tent **10** and an air conditioner **80**, wherein the air conditioner can be operably located with respect to the tent to provide a flow of cooled air into the tent.

[0026] As seen in FIGS. **1-4**, **7-9**, the tent **10** includes a frame **20** and a shell **40** attached to the frame.

[0027] The frame **20** is constructed to retain the shell **40** in the desired or required shape. Typically, the frame **20** is constructed from a plurality of poles or struts **22**, moveable between a collapsed position and an upright position.

[0028] In one configuration, the poles **22** can be rigid and of a fixed length, wherein the poles or sections of the poles can be selectively engaged, interlocked or interconnected as known in the art, to provide the desired structure to support the shell. The poles or pole sections **22** can be interconnected by an internal cord (not shown) such as an elastic cord or bungee cord running the length of the pole or at least spanning the relevant junction of the sections.

[0029] It is also understood the poles **22** can be telescoping to allow for movement of the frame **20** between the collapsed and the upright configuration of the frame.

[0030] In an alternative configuration, the frame **20** can include a plurality of flexible poles **22**. Typically, the flexible poles **22** are tubes or cylinders of fiberglass or comparable material. The flexible poles **22** can be sectioned, wherein one section includes a socket to operably receive an adjacent section. As with the rigid poles, the flexible pole sections can be interconnected by an internal cord such as an elastic cord or bungee cord running the length of the pole or at least spanning the relevance junction of the sections.

[0031] The shell **40** can have any of a variety of configurations such as single skin, single skin with a fly sheet, double

skin or combinations thereof. Typically, in each configuration, the shell **40** includes a ground sheet or floor **42**, which is used to provide a water resistant barrier between the ground and items stored or retained within the tent **10**.

[0032] In the single skin configuration, the shell **40** typically includes a single water proof layer of fabric. In the single skin with fly sheet configuration, a fly sheet or rain fly is suspended over and clear of a roof of the shell **40**, wherein the fly overlaps and extends slightly beyond the periphery of the roof, but does not typically extend down the sides of the tent. In the double-skinned configuration, the outer skin acts as a fly sheet but extends down to the ground to substantially encompass the inner sheet.

[0033] The frame **20** and the shell **40** can be configured to provide any of a variety of tent configurations depending upon the desired capacity and weather resistance.

[0034] The frame **20** and shell **40** define an interior **12** within the shell and a exterior **14** outside the shell. The shell **40** can include a roof or ceiling **44**, as well as a door **46** and windows **48**. The door **46** and windows **48** can include screening **50** to permit air passage while reducing the migration of pests to the interior of the tent **10**. It is contemplated the roof **44** or an upper portion of the shell **40** can include vents **45**, wherein the vents can be selectively opened or closed to allow the passage of air therethrough.

[0035] The shell **40** can be any of a variety of materials as commonly used in the tent industry, including thermoplastics, thermosets or combinations thereof, including but not limited to nylon, vinyl, polyethylene, high density polyethylene, cotton and cotton polyester blends.

[0036] Referring to FIGS. **3-9**, the shell **40** includes a sealing sleeve **60** sized to operably engage the air conditioner **80**. The sealing sleeve **60** defines a variable diameter opening or port **63**. The sealing sleeve **60** can include any of a variety of closure mechanisms **64** for adjusting the size of the port **63**. In one configuration, the sealing sleeve **60** includes an elastic cord **64** disposed about the port **63**, wherein the elastic cord is biased to draw the port of the sealing sleeve to the minimum opening size. Alternatively, a draw string can be disposed about the port **63** for manually adjusting the port size. It is further understood that alternative configurations such as hook and loop fasteners or snaps can be used to vary the size of the port **63** in the sealing sleeve **60**.

[0037] In one configuration, the closure mechanism **64** can vary the entire periphery of the port **63**. For example, in the port **63** having a generally rectangular shape, the closure mechanism **64** can reduce the dimension of each of the four sides of the rectangle. Similarly, if the port **63** is generally circular, the closure mechanism **64** concentrically reduces the periphery of the port. Thus, the closure mechanism **64** can change the location of the top, the bottom and the sides of the port **63**.

[0038] In one configuration, the sealing sleeve **60** is generally co-planer with the adjacent portion of the shell **40**. Alternatively, the sealing sleeve **60** can be constructed to extend into the interior **12**, or alternatively to the exterior **14** of the tent. In the exterior projecting sealing sleeve configuration, the shell **40** includes at least a screen **50** generally coextensive with the maximum size of the port **63** in the sealing sleeve **60** such that upon the disposing the air conditioner **80** entirely external to the shell **40**, the sealing sleeve extends toward the exterior **14** and engages the air conditioner with any of a variety of coupling mechanisms such as hooks, straps or bands.

[0039] Referring to FIGS. **12** and **13**, the shell **40** can include an interior flap **66** sized to occlude the port **63** in the sealing sleeve **60**, thereby allowing the tent **10** to be used without an air conditioner within the sealing sleeve.

[0040] The interior flap **66** is immovable between a closed position occluding the port **63** of the sealing sleeve **60** and an open position exposing the port of the sealing sleeve. In one configuration, the interior flap **66** is sized to overlie the sealing sleeve **60** and the sealing sleeve port **63**. The interior flap **66** can be retained in the closed position by any of a variety of closure mechanisms **70** such as zippers, hook and loop fasteners, snaps, detents or other mechanical interconnects.

[0041] In a further configuration, the shell **40** includes an exterior flap **68** or canopy movable between a closed position covering the sealing sleeve **60** and the port **63** and an open position exposing the port of the sealing sleeve to the ambient environment. The exterior flap **68** can be retained in the closed position by any of a variety of the closure mechanisms to such as zippers, hook and loop fasteners, snaps, detents or other mechanical interconnects.

[0042] In one configuration, the exterior flap **68** includes a pair of side gussets interconnecting edges of the exterior flap to the shell. The gussets and exterior flap **68** thus define a sheltering about three sides of the sealing sleeve **60**. The exterior flap **68** is sized to shield the exterior of the air conditioner **80** from direct sunlight as well as rain, thereby assisting in the operating characteristics of the air conditioner.

[0043] The exterior flap **68** can include tie downs or cords which extend from an upper portion of the exterior flap to the ground for securing and orienting the exterior flap.

[0044] As seen in FIGS. **1** and **10**, in one configuration, the exterior flap **68** is connected to, or incorporates a generally U shaped strut **76**, wherein free ends of the strut are connected to the shell **40** adjacent the ground. The closed end of the strut **76** is moveable between a first position adjacent the shell **40** and a second operable position spaced from the shell, wherein the corresponding fabric of the exterior flap **68** is connected to the exterior of the shell and the strut.

[0045] Referring to FIGS. **3**, **4**, **7-9** and **11**, in one configuration, the shell is constructed to form a generally air impervious basin or tub **54**, which includes the floor or ground sheet **42** of the tent **10** and the lower portion of side walls **52**. The tub **54** is sized to generally retain a portion of the cooled air produced by the air conditioner **80**. Any doors **46** or windows **48** within the tub **54** include closure flaps for substantially sealing the respective door or window, so that the relatively dense cooled air produced by the air conditioner **80** does not immediately escape from the interior **14** of the tent **10**. The basin **54** extends upward approximately 5% to 25% of the height of the shell **40**, and depending upon the intended operating environment, up to 50% to 75% of the height of the shell. It is also contemplated the shell **40** can be formed such that the doors **46** and windows **48**, excepting the sealing sleeve **60**, do not extend within the height of the basin **54**.

[0046] It is further contemplated the air conditioner **80** can include one component of a hook and loop fastener which is adhesively bonded to the air conditioner and the corresponding component of the hook and loop fastener is disposed on the sealing sleeve **60**, such that the sleeve can be readily fit to the air conditioner.

[0047] The air conditioner **80** can be any of a variety of commercial available units typically operating on standard electrical supply grid, such as 115-120 volts. Depending on the size of the tent **10** and the anticipated ambient temperatures, the air conditioner is sized appropriately. A satisfactory air conditioner **80** includes a Haier window air conditioner, with a capacity of 6,000 BTU for a 6 person tent.

[0048] In a further configuration, the air conditioner **80** can include an internally exposed receptacle **82** which is operably

connected to the power input to the air conditioner. Thus, a user can plug a standard 60 cycle, 120 volt appliance into the exposed receptacle outlet of the air conditioner **80** thereby effectively "powering" the tent, while the air conditioner provides cooled air. In one configuration, a GFCI receptacle is provided for interconnecting to the power cord of the air conditioner **80** to an existing external service. As the power cord of the air conditioner **80** is located outside the tent shell, no cords or electrical connections are required within the tent.

[0049] It is also contemplated the air conditioner **80** can be a heat pump as well known in the art. The heat pump is typically sized corresponding to the anticipated loads, and can thus selectively provide either heating or cooling capacity. For purposes of description, the term "air conditioner" is understood to encompass a heat pump.

[0050] In one configuration, a stand **90** supports the air conditioner **80** and retains the air conditioner within the sealing sleeve **60**. In this configuration, the sealing sleeve **60** circumscribes the combined cross-section of the stand **90** and the air conditioner **80**.

[0051] The stand **90** can have any of a variety of configurations including a generally planar base **92** with a peripheral flange **94** forming a pan. The stand **90** can further include legs **96** for elevating the air conditioner **80** from the ground. The legs **96** can be fixed or collapsible, as well as adjustable. The stand **90** is typically sized to dispose the air conditioner **80** approximately 6, 8, 10 or 12 inches from the ground. One of the stand **90** and the air conditioner **80** can include a seal to substantially preclude air passage between the stand and the air conditioner.

[0052] Referring to FIG. **10**, the air conditioner **80** can be a two-piece unit, wherein the compressor and a primary heat exchanger are disposed in an external unit **86** and a secondary heat exchanger and fan are disposed in an internal unit **88**, such that the external unit and the internal unit are interconnected by conduits **87**. The conduits **87** carry a chilled medium from the external unit **86** to the internal unit **88** and the warmed medium from the internal unit to the external unit. In this construction, the sealing sleeve **60** and the corresponding port **63** in the sealing sleeve are sized to receive the conduits **87** and at least substantially seal about the periphery of the conduits. Thus, the sealing sleeve **60** and the port **63** are relatively small, on the order of 1 inch to 5 inch diameter. In this configuration, the shell **40** can include the exterior flap or canopy **68** for extending over the top of the external unit **86**.

[0053] The internal unit **88** includes the control interface for operating the air conditioner, thereby allowing the user to control the internal environment of the tent, without having to leave the tent.

[0054] In operation with the single unit air conditioner, the air conditioner **80** is disposed on the stand **90**. The stand **90** and the air conditioner **80** are then located within the port **63** of the sealing sleeve **60**, such that the output of the air conditioner is directed to the interior of the shell **40** and the exhaust of the air conditioner is vented to the exterior of the shell.

[0055] The diameter of the port **63** in the sealing sleeve **60** is adjusted to abut the port with the air conditioner **80**. That is, depending upon the specific configuration of the sealing sleeve **60**, the sealing sleeve is adjusted to be substantially adjacent to or sealed to the air conditioner **80** and stand **90**, thereby minimizing flow of ambient air between the sealing sleeve and the air conditioner.

[0056] The vents **45** in the roof **44** of the shell **40** can be opened to allow for the escape of relatively warm air from the interior of the tent **10** while the air conditioner **80** introduces chilled air into the tub or lower portion of the tent.

[0057] In operation of the internal unit-external unit configuration, the internal unit **88** is located in the interior of the tent shell **40** and the exterior unit **86** is located outside the shell, wherein the conduits **87** extend through the port **63** in the sealing sleeve **60**.

[0058] While the invention has been described in conjunction with specific exemplary embodiments thereof, it is evident that many alternatives, modifications, and variations will be apparent to those skilled in the art in light of the foregoing description. Accordingly, the present invention is intended to embrace all such alternatives, modifications, and variations as fall within the spirit and broad scope of the appended claims.

1. A tent assembly, comprising:
(a) an erectable frame moveable between a collapsed configuration and an upright configuration;
(b) a shell connected to the frame, the shell having a floor and side walls, wherein one of the side walls includes a sealing sleeve having an adjustable port configurable between a restricted diameter and an expanded diameter, an internal flap movable between a closed position occluding the port and an open position exposing the port; and
(c) an air conditioner located within the sealing sleeve, the adjustable port sized to be adjacent the air conditioner.

2. The tent assembly of claim **1**, further comprising an exterior flap extending from the shell, the exterior flap movable between a closed position occluding the port and an open position spaced from the port.

3. The tent assembly of claim **2**, further comprising a gusset connecting a portion of the exterior flap to the shell.

4. The tent assembly of claim **1**, wherein the sealing sleeve is biased to the restricted port diameter.

5. The tent assembly of claim **1**, further comprising a stand supporting the air conditioner in the sealing sleeve.

6. The tent assembly of claim **5**, wherein the stand includes a plurality of legs moveable between a collapsed position and a standing position.

7. The tent assembly of claim **1**, wherein the port in the sealing sleeve is sized to encircle a portion of the air conditioner and a stand supporting the air conditioner.

8. The tent assembly of claim **1**, wherein the shell includes a floor and a substantially air impervious basin extending upward from the floor to at least 10% of a height of the shell.

9. A method of regulating a temperature in a tent assembly, the method comprising:
(a) disposing an air conditioner within a port of a sealing sleeve in a wall of a tent shell;
(b) adjusting the sealing sleeve to seal about a periphery of the air conditioner; and
(c) operating the air conditioner to introduce cooled air into the tent.

10. The method of claim **9**, further comprising opening a vent in an upper portion of the tent shell to allow the escape of air that is warmer than the cooled air.

11. The method of claim **9**, further comprising disposing the air conditioner on a stand.

12. The method of claim **11**, further comprising disposing a portion of the stand within the port.

13. The method of claim **11**, further comprising moving the stand between a collapsed configuration and an erect configuration.

* * * * *