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(54) **AIR SHOWER DEVICE AND AIR CONDITIONING DEVICE**

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(57) **ABSTRACT**

A body of an air shower device is hollow and defines an internal space. The body has an upper wall and a lower wall, which are opposed to each other. The upper wall has an opening extending though the upper wall. The lower wall has apertures extending though the lower wall. The body draws air from the opening to conduct the air through the internal space and to spray the air from the internal space through the apertures to an outside of the body.

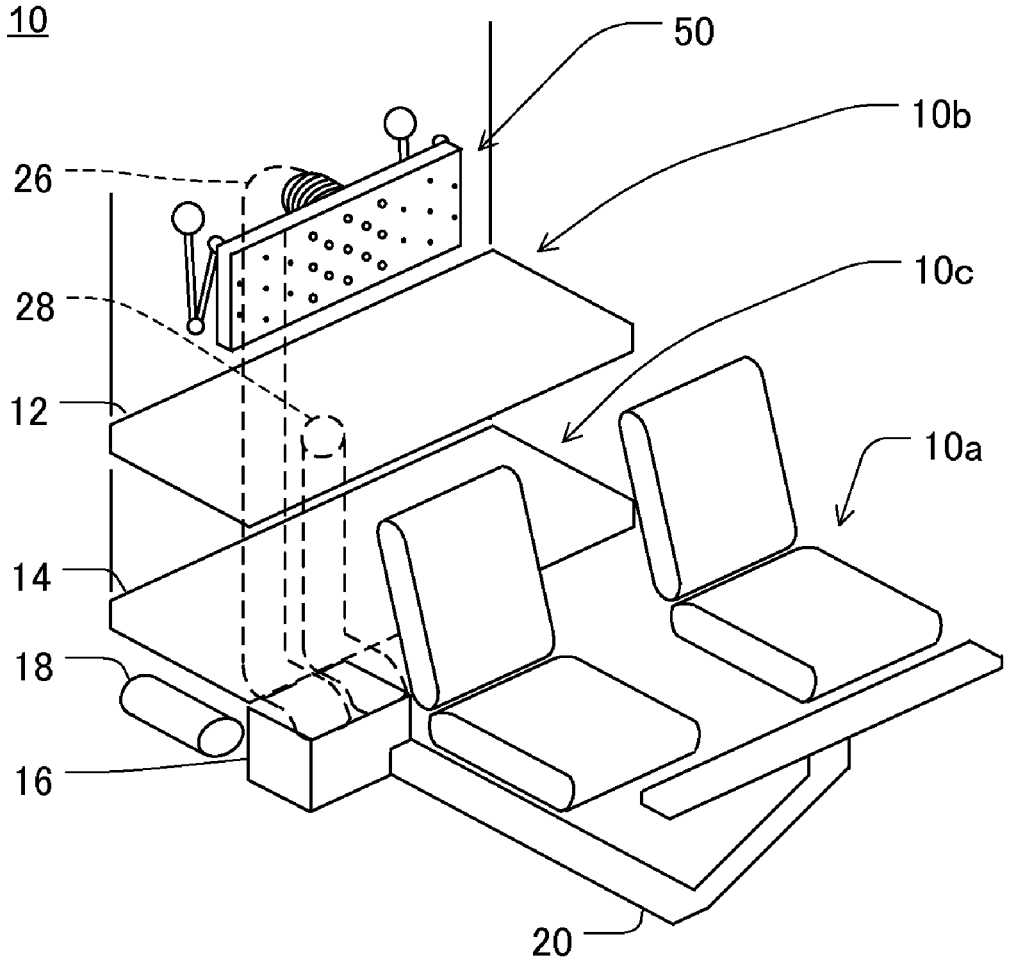


FIG. 1

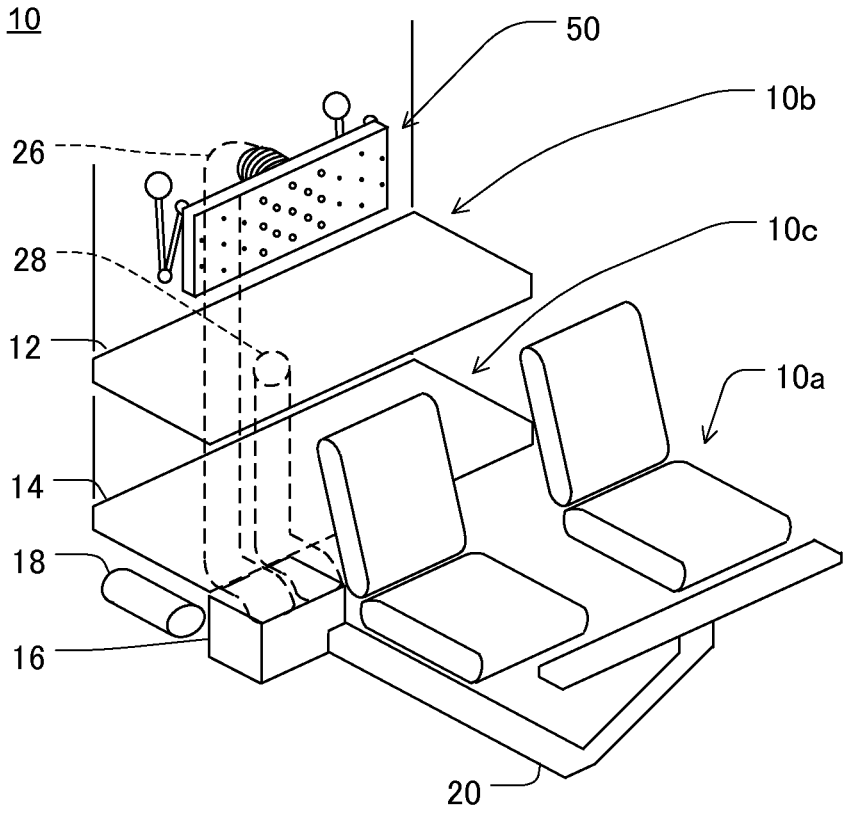


FIG. 2

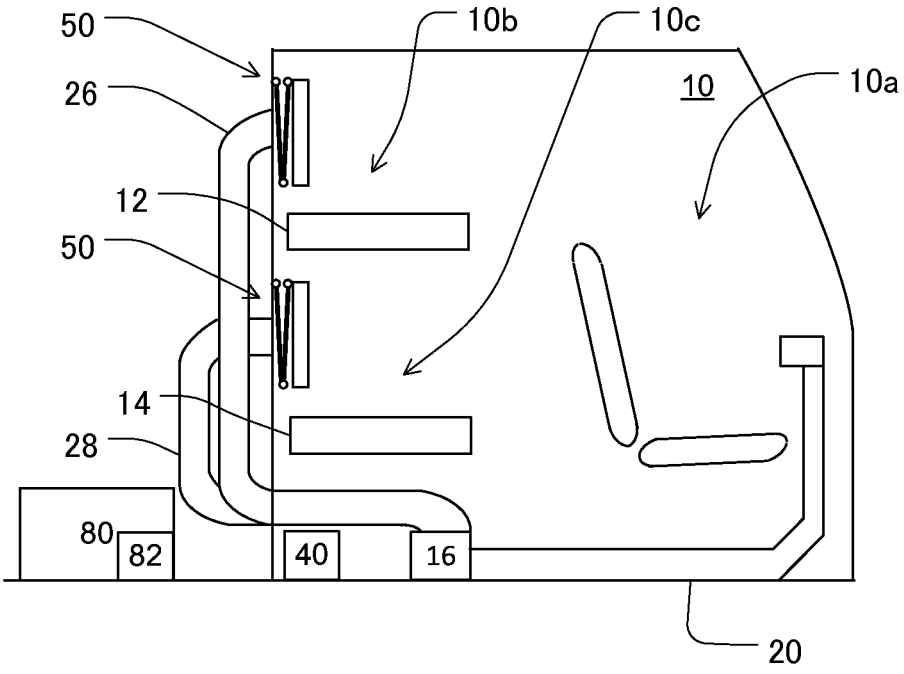


FIG. 3

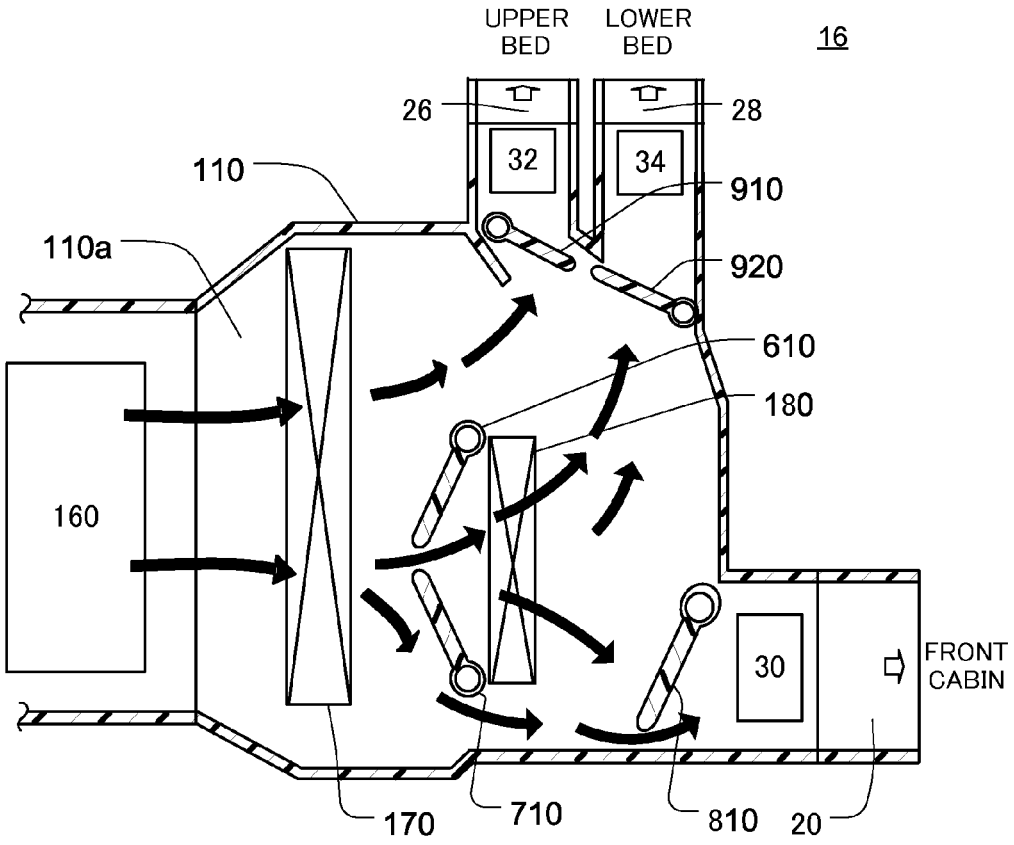

UPPER BED
LOWER BED
16
26
28
32
34
110
910
110a
920
610
180
160
30
FRONT CABIN
170
710
810
20

FIG. 4

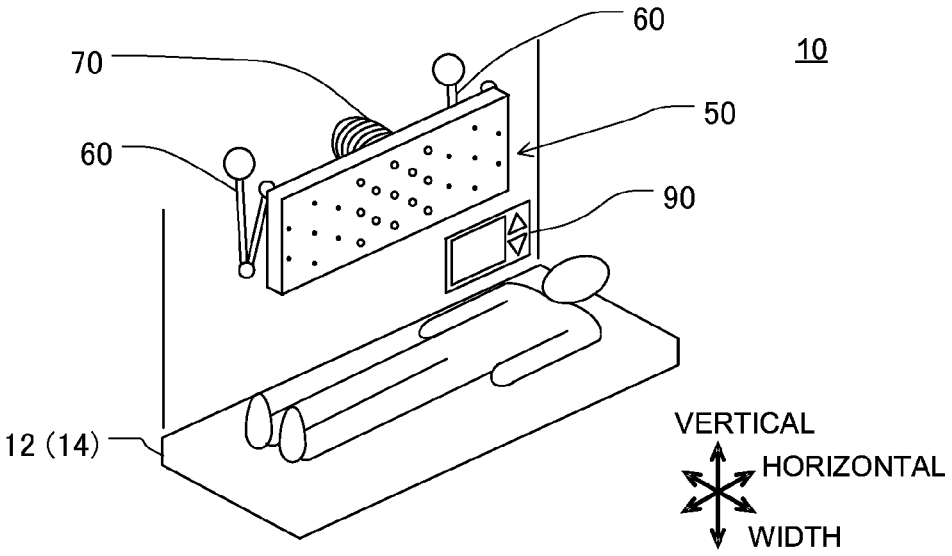

60
10
70
50
60
90
12 (14)
VERTICAL
HORIZONTAL
WIDTH

FIG. 5

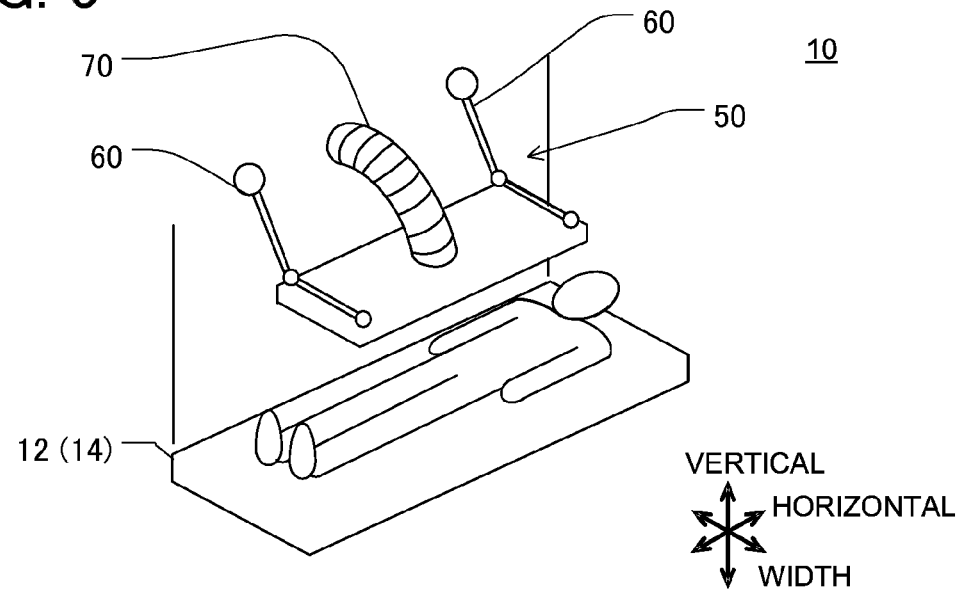

60
10
70
50
60
12 (14)
VERTICAL
HORIZONTAL
WIDTH

FIG. 6

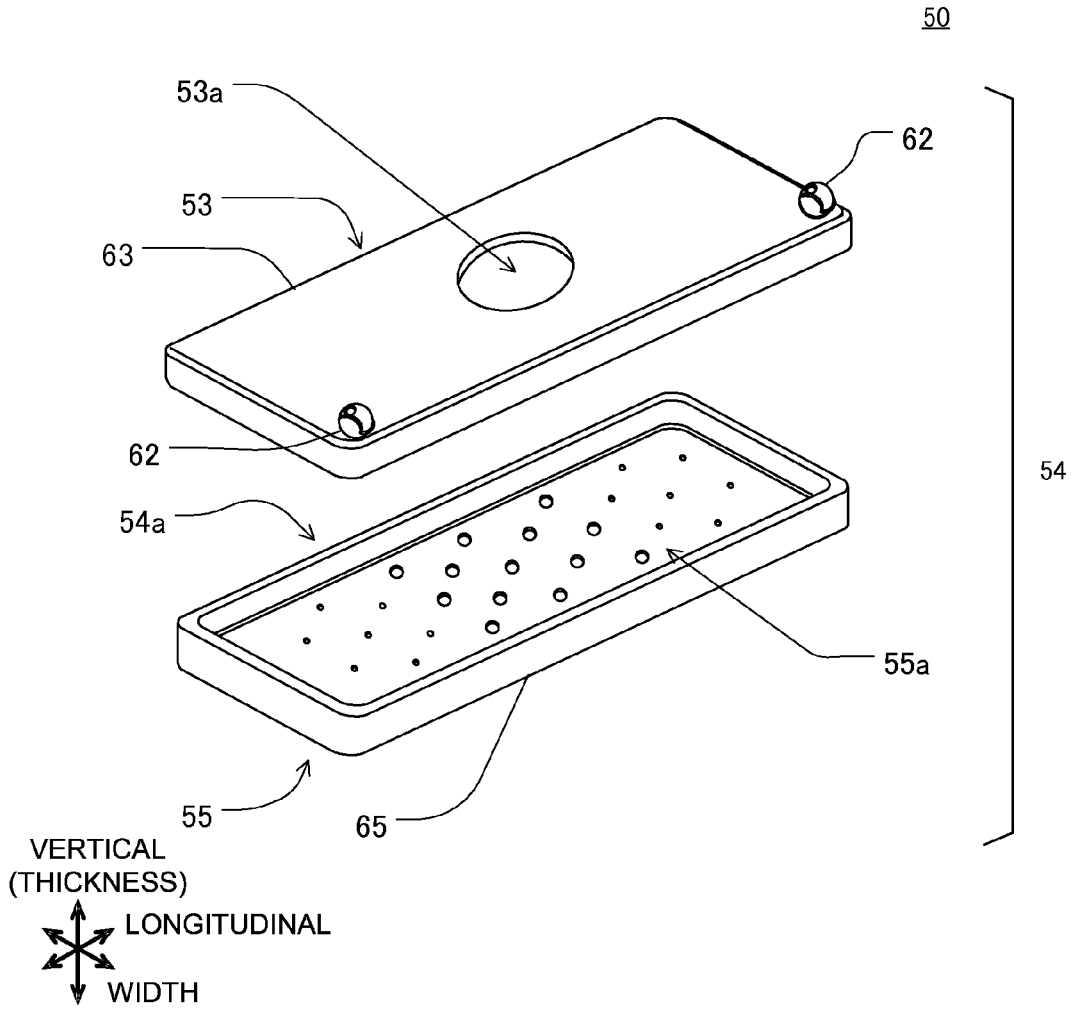

50
53a
62
53
63
62
54a
54
55a
55
65
VERTICAL
(THICKNESS)
LONGITUDINAL
WIDTH

FIG. 7

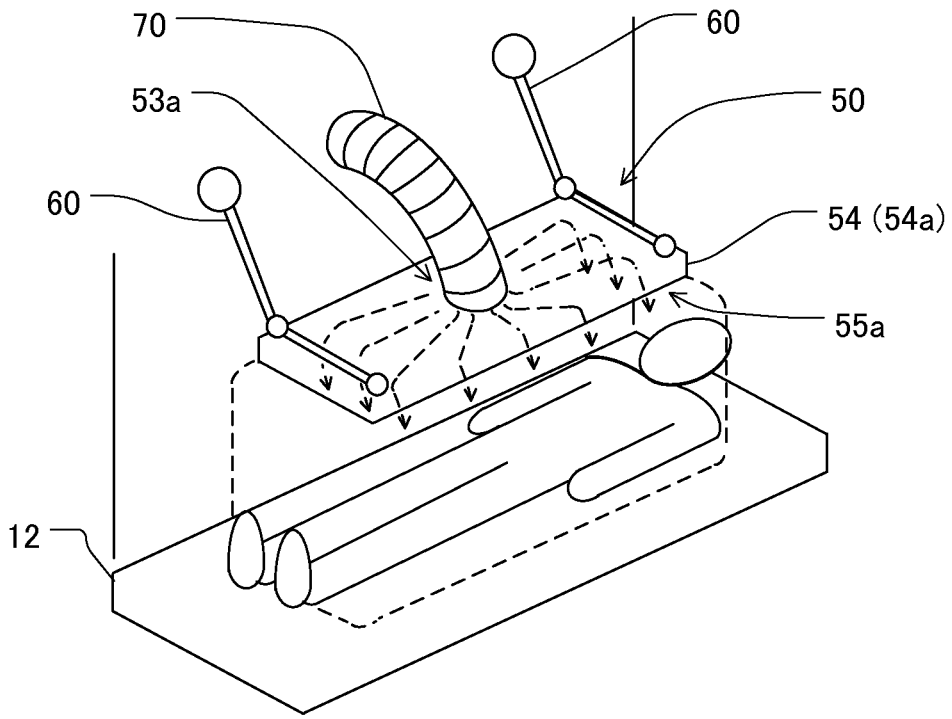


FIG. 8

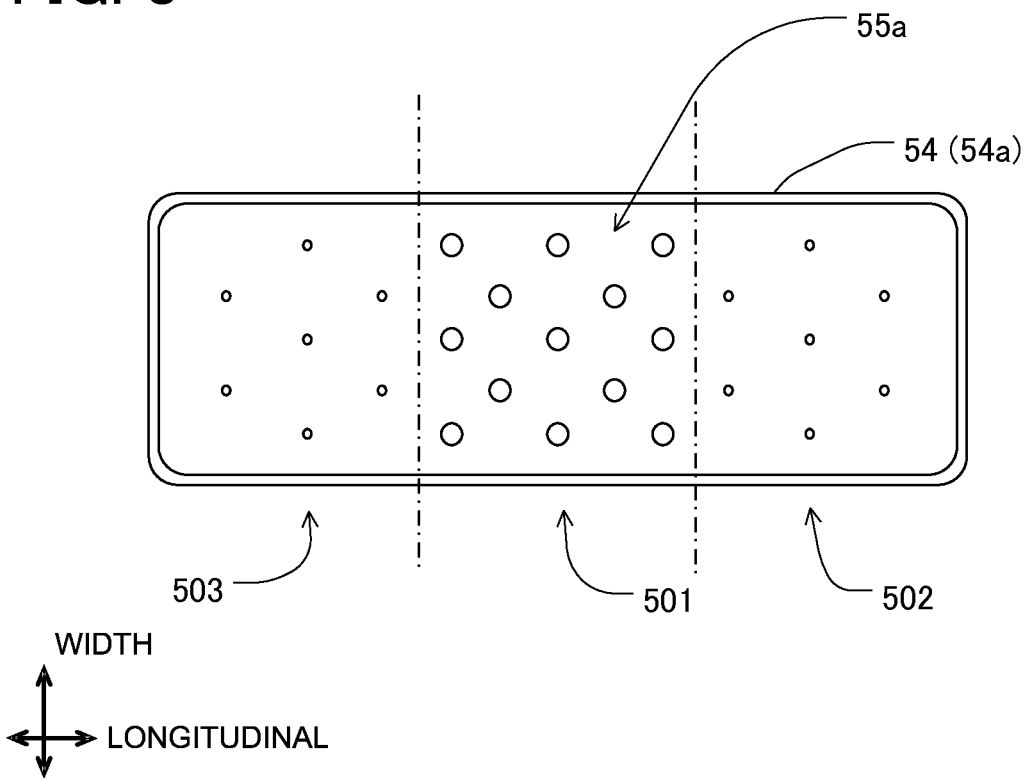


FIG. 9

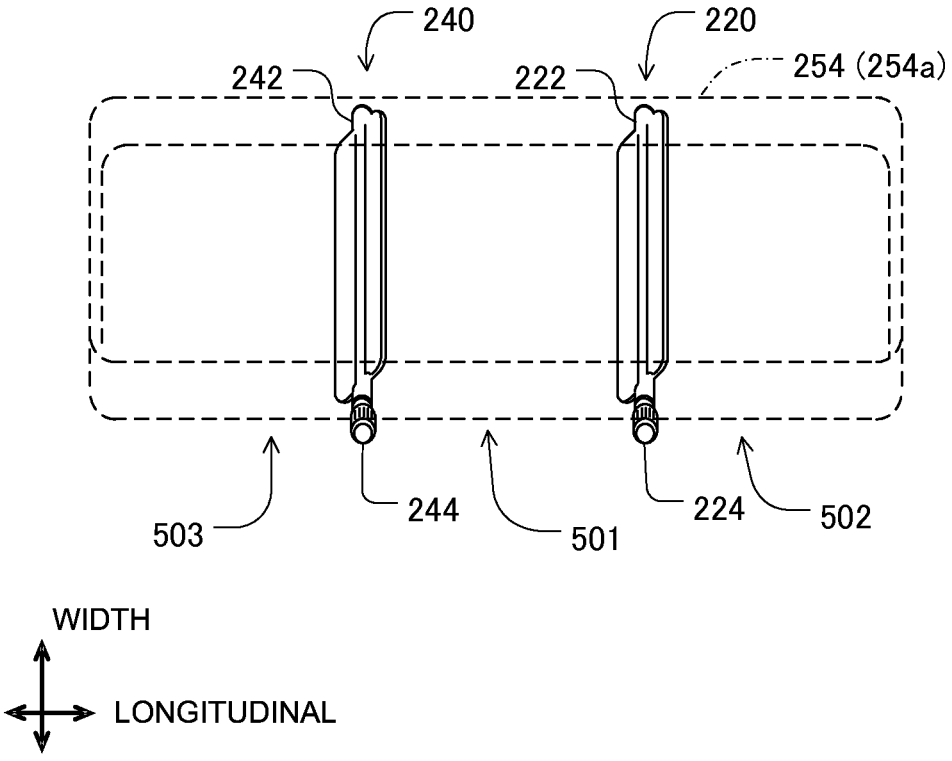

240
220
242
222
254 (254a)
503
244
501
224
502
WIDTH
LONGITUDINAL

FIG. 10

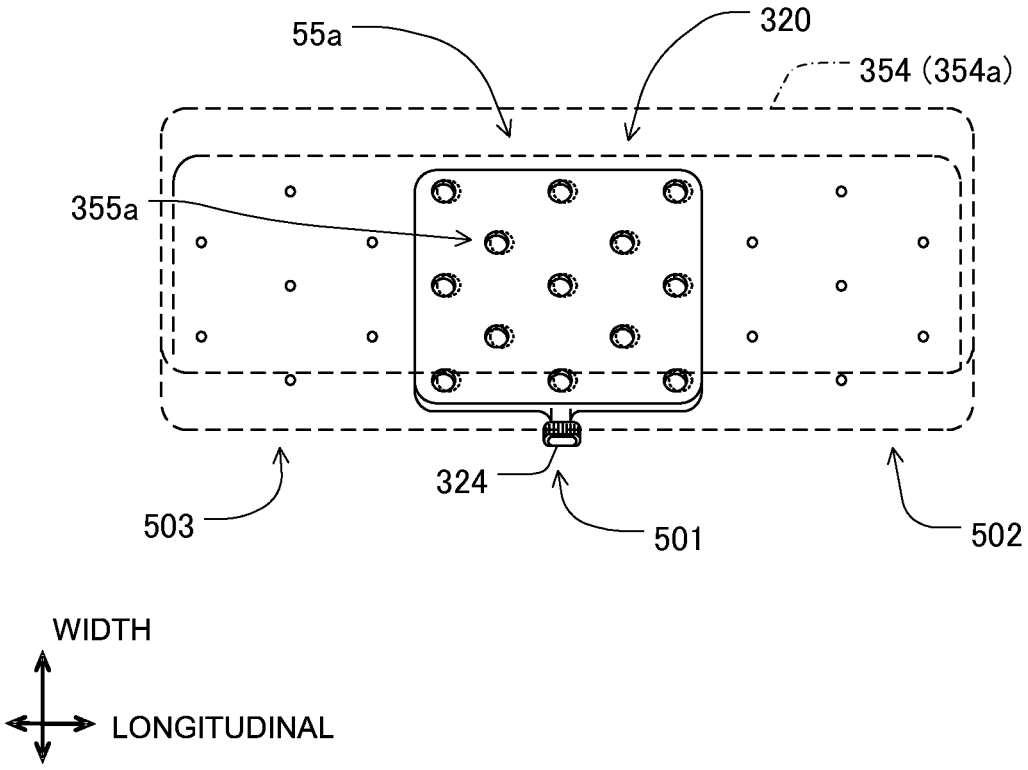


FIG. 11

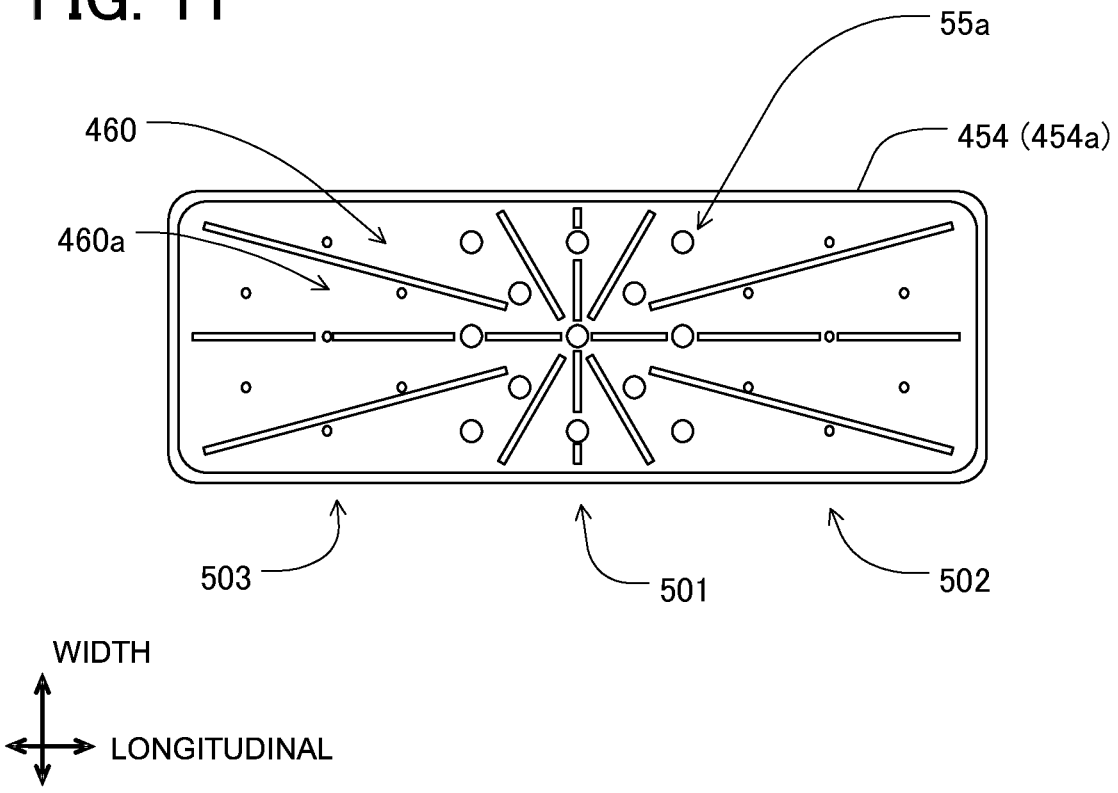


FIG. 12

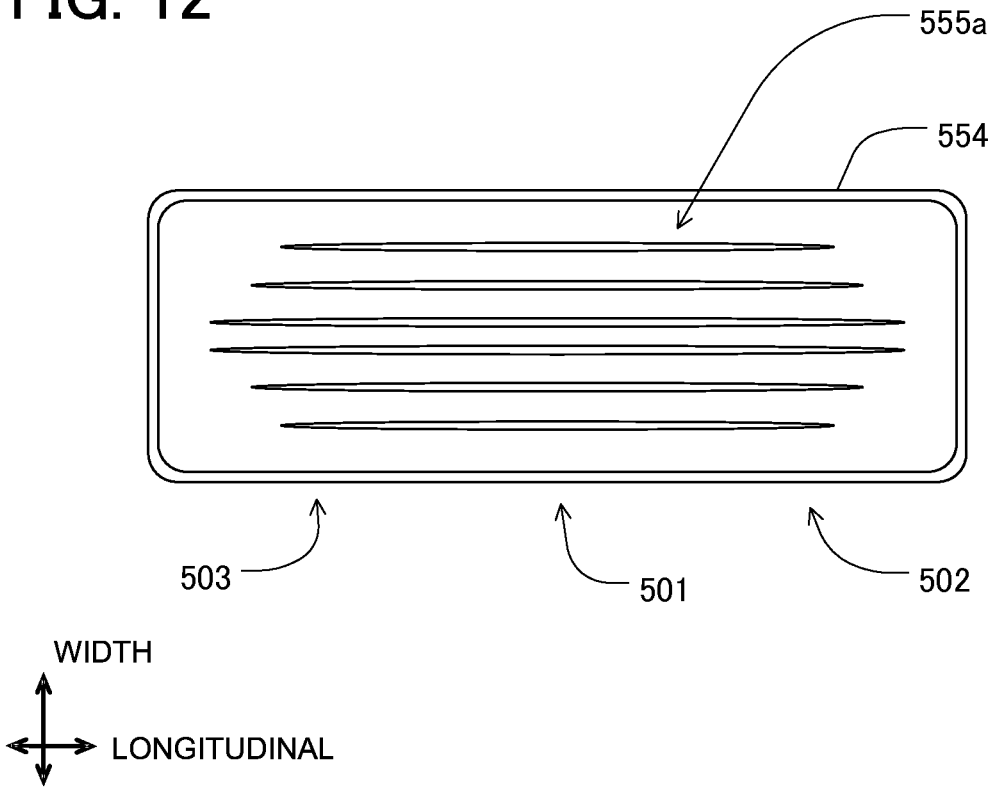


FIG. 13

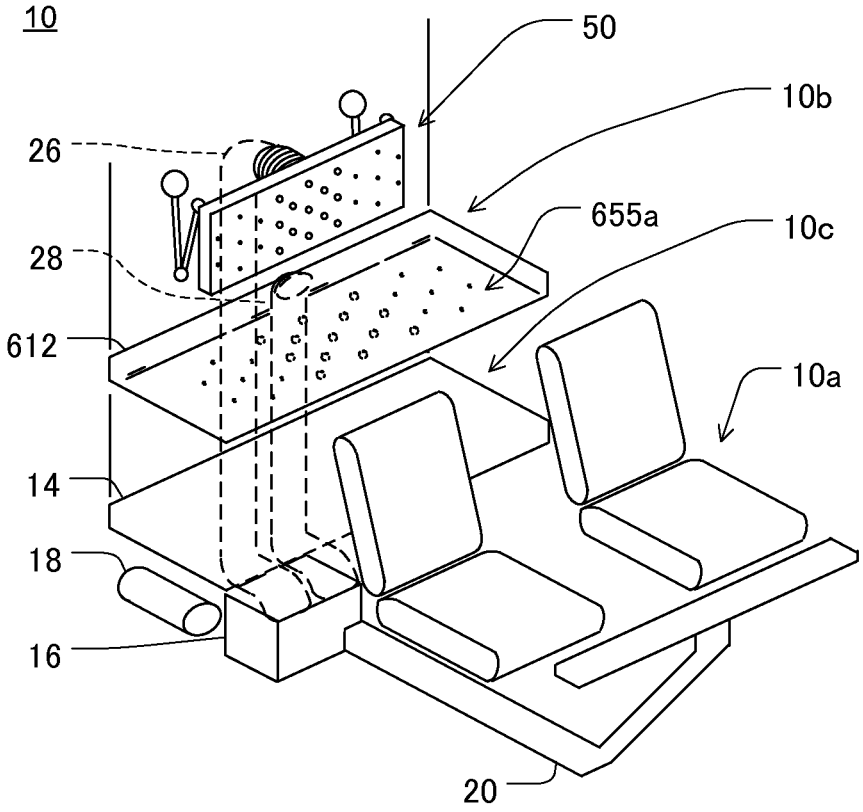


FIG. 14

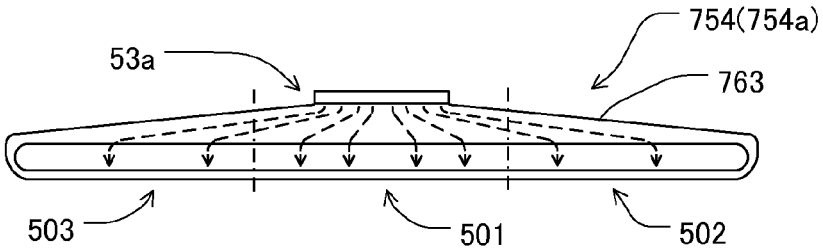


FIG. 15

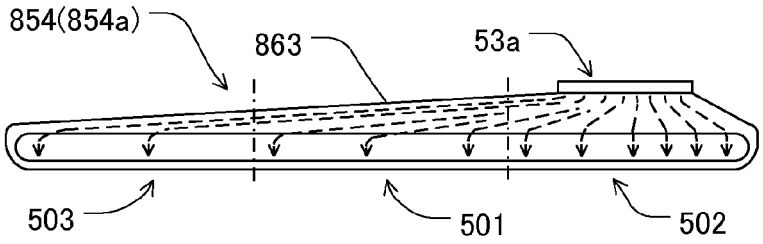
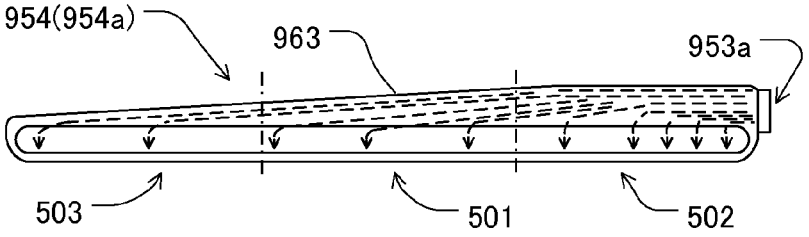
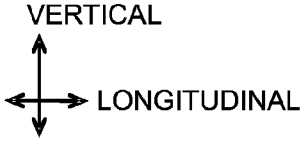


FIG. 16





AIR SHOWER DEVICE AND AIR CONDITIONING DEVICE

TECHNICAL FIELD

[0001] The present disclosure relates to an air shower device. The present disclosure further relates to an air conditioning device having the air shower device.

BACKGROUND

[0002] Conventionally, a vehicle may include an air conditioning device to perform air-conditioning in a cabin of the vehicle. It may be preferable to enhance efficiency of air-conditioning in the vehicle.

SUMMARY

[0003] According to an aspect of the present disclosure, an air shower device may comprise a body being hollow and defining an internal space. The body may have an upper wall and a lower wall, which are opposed to each other. The upper wall may have an opening extending though the upper wall. The lower wall may have a plurality of apertures extending though the lower wall. The body may be configured to draw air from the opening to conduct the air through the internal space and to spray the air from the internal space through the apertures to an outside of the body.

BRIEF DESCRIPTION OF THE DRAWINGS

[0004] The above and other objects, features and advantages of the present invention will become more apparent from the following detailed description made with reference to the accompanying drawings. In the drawings:

[0005] FIG. **1** is a schematic perspective view showing a cabin of a vehicle;

[0006] FIG. **2** is a schematic side view showing the cabin;

[0007] FIG. **3** is a schematic sectional view showing an HVAC unit for the vehicle;

[0008] FIG. **4** is a schematic perspective view showing an air shower device being folded;

[0009] FIG. **5** is a schematic perspective view showing the air shower device being extended;

[0010] FIG. **6** is an exploded perspective view showing components of the air shower device;

[0011] FIG. **7** is a schematic perspective view showing the air shower device being used;

[0012] FIG. **8** is a schematic plan view showing a component of the air shower device;

[0013] FIG. **9** is a schematic perspective view showing an air shower device of a second embodiment;

[0014] FIG. **10** is a schematic perspective view showing an air shower device of a third embodiment;

[0015] FIG. **11** is a schematic plan view showing an air shower device of a fourth embodiment;

[0016] FIG. **12** is a schematic plan view showing an air shower device of a fifth embodiment;

[0017] FIG. **13** is a schematic perspective view showing a cabin of the vehicle according to a sixth embodiment;

[0018] FIG. **14** is a schematic side view showing an air shower device of a seventh embodiment;

[0019] FIG. **15** is a schematic side view showing an air shower device of an eighth embodiment; and

[0020] FIG. **16** is a schematic side view showing an air shower device of a ninth embodiment.

DETAILED DESCRIPTION

First Embodiment

[0021] FIGS. **1** and **2** show a vehicle such as a trailer truck. The vehicle has a cab **10** having a front cabin **10***a*, an upper rest area **10***b*, and a lower rest area **10***c*. Both the upper rest area **10***b* and the lower rest area **10***c* are behind the front cabin **10***a*. An upper bed **12** and a lower bed **14** are installed in the upper rest area **10***b* and the lower rest area **10***c*, respectively.

[0022] An air-conditioning system may include a heating, ventilation, and air conditioning unit (HVAC unit) **16**, a compressor **18**, and ducts **20**, **26**, **28**. The air-conditioning system is configured to perform air-conditioning in the cab **10**. The air-conditioning system may further include a thermal medium pipe (not shown) between the HVAC unit **16** and the compressor **18** to conduct thermal medium. The HVAC unit **16** and the compressor **18** are, for example, located under the bed **12**.

[0023] As shown in FIG. **3**, the HVAC unit **16** includes a case **110** accommodating, for example, a blower **160**, an evaporator **170**, and a heater **180**. The case **110** rotatably accommodates heater doors **610** and **710**, a front-cabin door **810**, an upper-bed door **910** and a lower-bed door **920**, which are driven by a motor and a link (not shown).

[0024] The case **110** defines a main passage **110***a* communicating with an outside of the case **110**. In the case **110**, the blower **160**, the evaporator **170**, and the heater **180** may be arranged in this order relative to a flow direction of the airflow in the case **110**. The front-cabin door **810**, the upper-bed door **910**, and the lower-bed door **920** may be equipped for the ducts **20**, **26**, **28**, respectively.

[0025] The blower **160** is driven by a motor (not shown) to blow air through the main passage **110***a* and the evaporator **170** toward the heater **180**. The heater doors **810** and **710** are controlled to permit airflow through the heater **180**. The front-cabin door **810**, the upper-bed door **910**, and the lower-bed door **920** may be operable individually to control flow of conditioned air supplied through the ducts **20**, **26**, **28** to the front cabin **10***a*, the upper rest area **10***b*, and the lower rest area **10***c*, respectively.

[0026] A first fan **30**, a second fan **32**, and a third fan **34** may be equipped for the ducts **20**, **26**, **28**, respectively. The fans **30**, **32**, **34** may boost conditioned air supplied to the front cabin **10***a*, the upper rest area **10***b*, and the lower rest area **10***c*, respectively. The fans **30**, **32**, **34** may be selectively activated, such that the at least one of the fans **30**, **32**, **34** is operated for an area occupied by a person.

[0027] The refrigerant cycle may be equipped with a cold storage unit **40** (FIG. **2**) for storing cooled item such as a cold drink. Specifically, the cold storage unit **40** may be connected with the compressor **18** and the HVAC unit **16** via a thermal medium pipe (not shown) to conduct a thermal medium.

[0028] In FIG. **2**, the vehicle may have a non-idle system (parking system) **80** equipped with an auxiliary power unit **82**. Specifically, the auxiliary power unit **82** may include a high-capacity power source such as an electric capacitor.

[0029] The vehicle may be a hybrid vehicle including a motor generator to convert kinetic energy of the vehicle into an electric energy and to charge the auxiliary power unit **82** with the converted electric energy. In this case, the motor generator may be also to convert an electric energy accumulated in the auxiliary power unit **82** into a driving power.

[0030] The auxiliary power unit **82** may be configured to supply electricity for driving the compressor **18** of the air-conditioning system, the cold storage unit **40**, and/or the like. The auxiliary power unit **82** may be operational regardless of whether an internal combustion engine of the vehicle is active or inactive and/or regardless of whether the vehicle is parking or travelling. The auxiliary power unit **82** may control its electricity supply according to the operational state of the internal combustion engine. The auxiliary power unit **82** may operate the fans **30**, **32**, **34**, the compressor **18**, and or the like selectively in order to supply conditioned air to the cab **10**.

[0031] The upper bed **12** and the lower bed **14** may be equipped with air shower devices **50**, respectively. The air shower devices **50** may have a common structure. The air shower devices **50** may be normally folded on a wall, when not being used, in order not to obstruct a user to use the rest area **10***b* and/or **10***c*. As follows, the air shower device **50** will be described.

[0032] As shown in FIGS. **4** and **5**, the air shower device **50** may be supported by a wall of the cab **10** via two support arms **60**. Each of the support arms **60** may include, for example, universal joints having multiple movable joints. Each of the movable joints may be a ball joint or a combination of rotational joints to swing in multiple directions. The support arms **60** may enable the air shower device **50** to be folded along the wall. For example, the air shower device **50** may be normally folded on the wall when the vehicle is travelling and when the air shower device **50** is not being used. The support arms **60** may enable the air shower device **50** to be unfolded and extended from the wall. For example, when a user of the vehicle takes a rest and uses the air shower device **50**, the user may unfold the air shower device **50** from the wall and may adjust the position of the air shower device **50** relative to the user. The support arms **60** may be universally movable in both the vertical and horizontal directions and may be adjusted in position relative to the bed.

[0033] The support arm **60** may be a simple hinged arm having a single axis to swing in one rotational direction along the axis. The air shower device **50** may be supported via, for example, one support arm **60** or three or more support arms **60**. The support arm **60** may be electrically driven or electrically assisted.

[0034] The air shower device **50** may be connected with corresponding one of the ducts **26** and **28** through a flexible duct **70**. The flexible duct **70** is, for example, a bellows pipe having a corrugated passage wall. The flexible duct **70** may be formed of resin and may be bendable. The flexible duct **70** may be expandable when the air shower device **50** is unfolded from the wall. The flexible duct **70** may be shrinkable when the air shower device **50** is folded on the wall. The flexible duct **70** may be partially or entirely retractable into a space beyond the wall. The air shower device **50** may have a coupler such as a one-touch coupling device to be coupled with the flexible duct **70**. The flexible duct **70** may be configured to draw conditioned air from the HVAC unit **16** through the corresponding one of the ducts **26** and **28** into the air shower device **50**.

[0035] The flexible duct **70** may be provided with the air shower device **50** as, for example, an aftermarket product. The flexible duct **70** may be connected with the corresponding one of the ducts **26** and **28** by using an adaptor attachment. The duct **26** and/or **28** may be of, for example, a ready-made car, and the air shower device **50** and the flexible duct **70** may be installed in a ready-made car by coupling the flexible duct **70** to the duct **26** and/or **28**.

[0036] As shown in FIG. **6**, the air shower device **50** has a body **54**, which may be formed by combining an upper member (upper portion) **53** with a lower member (lower portion) **55**. The body **54** may be, for example, a hollow box-shaped device. Each of the upper member **53** and the lower member **55** may be in a rectangular bottomed tray shape having a U-shaped cross section. The upper member **53** may have couplers **62** via which the upper member **53** is coupled with the support arms **60**. The support arms **60** may be screwed to the couplers **62**, respectively. The upper member **53** may have an upper wall **63** defining an opening **53***a*. The opening **53***a* may be coupled with the flexible duct **70**. In the present example, the opening **53***a* is located in a center portion of the body **54**. The lower member **55** has a lower wall **65** having multiple apertures **55***a*. Each of the apertures **55***a* may be a thoughhole extending through the lower wall **65** of the lower member **55**. The upper member **53** and the lower member **55** combined with each other form the body **54** being a hollow member. The body **54** may be in a flat planer shape extending in the width direction and the longitudinal of the body **54**. The body **54** may be configured to conduct air from the flexible duct **70** through an internal space **54***a* of the body **54** in the width and longitudinal directions. The body **54** is formed of, for example, resin such as polycarbonate.

[0037] A shown in FIG. **7**, the body **54** may draw air from the flexible duct **70** through the opening **53***a* and conducts the air through the internal space **54***a* of the body **54**. Thus, the body **54** may spray the air from the internal space **54***a* through apertures **55***a* to the outside of the body **54**.

[0038] As shown in FIG. **8**, each of the apertures **55***a* may be in a circular shape having a diameter in a range between, for example, 1 millimeter and 10 millimeters. Each of the apertures **55***a* may extend perpendicularly to the thickness direction of the lower wall **65**. Each of the apertures **55***a* may be angled relative to the thickness direction of the lower wall **65**. For example, an aperture **55***a* located distant from a center portion **501** of the body **54** may be inclined relative to the thickness direction and directed toward the center portion **501**. In this way, the aperture **55***a* may be configured to spray conditioned air toward the center portion **501** at which a user is supposed to be located.

[0039] The apertures **55***a* may be distributed non-uniformly. For example, the apertures **55***a* may be distributed densely in a specific portion of the body **54** and may be distributed sparsely in a portion other than the specific portion. Specifically, the apertures **55***a* may be distributed densely in a specific portion by allocating a large number of the apertures **55***a* in the specific portion compared with the other portion and/or by allocating the apertures **55***a* each having a large diameter in the specific portion compared with the other portion. In this way, the apertures **55***a* may be distributed densely to spray an amount of air greater in the specific portion than an amount of air in the other portion.

[0040] For example, the air shower device **50** may be divided into three segments in the longitudinal direction and the density of the apertures **55***a* may be differed among the three segments. Specifically, the air shower device **50** may be divided into the center portion **501**, one end portion **502** and the other end portion **503** evenly in the longitudinal direction.

[0041] In the example of FIG. **8**, the apertures **55***a* may be distributed densely in the center portion **501** of the body **54** and may be distributed sparsely in the one end portion **502** and the other end portion **503** of the body **54**, which are other than the center portion **501**. Specifically, the center portion **501** has the apertures **55***a* greater in the diameter and/or greater in the number than the one end portion **502** and the other end portion **503**. Alternatively, the apertures **55***a* may be distributed uniformly throughout the body **54** in the longitudinal direction and/or in the width direction.

[0042] As follows, an operation of the air shower device **50** will be described. In the present example, a user may park the vehicle and may stop the engine. The auxiliary power unit **82** may be active to supply electricity to the HVAC unit **16** and other electrical devices. A user such as a driver or a passenger of the vehicle is to take a rest in the vehicle.

[0043] Referring back to FIG. **4**, the air shower device **50** may be normally folded on the wall when the user does not use the air shower device **50**. That is, FIG. **4** may show a condition before the user uses the air shower device **50**. The air shower device **50** may be raised along the vertical direction. The user lies on the bed.

[0044] FIG. **5** may show a condition where the user uses the air shower device **50**. The user on the bed may unfold the air shower device **50** from the wall. Specifically, the user may swing the air shower device **50** by about 90 degrees relative to the wall to place the air shower device **50** in parallel with the bed **12**. Thus, the air shower device **50** may be opposed to the bed **12**. The user may be currently interposed between the air shower device **50** and the bed **12**.

[0045] The flexible duct **70** may be expanded or drawn from the wall while maintaining communication between the air shower device **50** and the duct **26** or **28**. The support arms **60** may allow the air shower device **50** to move in both the vertical and horizontal directions to allow the user to adjust the position of the air shower device **50** relative to the user. The support arms **60** may allow the air shower device **50** to be rotated or to be angled relative to the bed **12**.

[0046] The user may operate a control panel **90** (FIG. **4**) equipped on the wall to control the HVAC unit **16**. Specifically, the user may manipulate a set temperature, a quantity of air, and/or the like. The HVAC unit **16** may manipulate the door **910** and/or **920** and may manipulate activation of the second fan **32** and/or the third fan **34** to control the quantity of air sprayed from the air shower device **50**.

[0047] Referring to FIG. **7**, the air shower device **50** may draw conditioned air from the flexible duct **70** and may enable to distribute the conditioned air throughout the internal space **54***a* in both the longitudinal and horizontal directions. Thus, the air shower device **50** may enable to spray conditioned air directly onto the user. As shown by the dotted lines, the sprayed conditioned air may form an air-conditioned region localized to surround the user.

[0048] After the user takes a rest, the user may fold the air shower device **50** onto the wall again to be in the state of FIG. **4**.

[0049] The configuration may allow to close at least one of the ducts **26** and **28** when being not used and may enable to reduce air conditioner load.

Second Embodiment

[0050] FIG. **9** schematically shows a body **254** of an air shower device of the second embodiment. In FIG. **9**, illustration of the apertures and the opening is omitted. The body **254** is depicted with dotted lines to show the relative relation with components. The body **254** may accommodate two inner doors **220** and **240** configured to throttle an internal space **254***a*. The door **220** may be located at a boundary between the center portion **501** and the one end portion **502**. The door **240** may be located at a boundary between the center portion **501** and the other end portion **503**.

[0051] The doors **220** and **240** may have axes **222** and **242**, respectively. The axes **222** and **242** may be rotatably supported by the body **254**. The door **220** may be rotatable to control communication between the center portion **501** and the one end portion **502**. The door **240** may be rotatable to control communication between the center portion **501** and the other end portion **503**. The axis **222** may be equipped with a knob **224** at one axial end. The axis **242** may be equipped with a knob **244** at one axial end. A user may manipulate the knob **224** and/or **244** to rotate the door **220** and/or **240** and to control communication between the center portion **501** and the one end portion **502** and/or the other end portion **503**. For example, when the user desires to reduce a quantity of air sprayed from the one end portion **502**, the user may rotate the knob **224** to rotate the door **220** to throttle the internal space **254***a* of the body **254**.

[0052] The door **220** and **240** may be electrically driven. The door **220** and **240** may be communicated with the control panel **90** and may be manipulated according to a control signal from the control panel **90**.

[0053] The door **220** and/or **240** may have a sealing member at its outer periphery to seal the outer periphery with an inner periphery of the body **254**. One of the door **220** and/or **240** may be omitted. The number of the doors may be three or more.

Third Embodiment

[0054] FIG. **10** schematically shows a body **354** of an air shower device of the third embodiment. In FIG. **10**, illustration of the opening is omitted. The body **354** is depicted with dotted lines to show the relative relation with components. The body **354** may accommodate an inner door **320** slidable along the longitudinal direction of the body **354** to throttle the apertures **55***a*. Specifically, the inner door **320** may be located at the center portion **501** of the body **354**. The inner door **320** may be arranged along the lower wall **65** of the body **354**. The inner door **320** may be supported by a rail (not shown) formed on the lower wall **65** of the body **354**. Thus, the inner door **320** may be slidable along the lower wall **65** in the longitudinal direction.

[0055] The inner door **320** may have multiple apertures **355***a* arranged such that the apertures **355***a* of the inner door **320** can be overlapped with the apertures **55***a* formed in the lower wall **65** of the body **354**, respectively, when the inner door **320** is at a specific position. As the inner door **320** moves away from the specific position, the apertures **355***a* of the inner door **320** may be deviated from the corresponding apertures **55***a* of the body **354** thereby to throttle the corresponding apertures **55***a*. In this way, the inner door **320** may be slidable to control an opening area of the apertures **55***a* of the body **354**. The inner door **320** may be equipped with a lever **324** at one end. A user may manipulate the lever **324** to slide the inner door **320** to control the opening area of the apertures **55***a* thereby to control a quantity of air sprayed from the apertures **55***a*. For example, when the user desires to reduce a quantity of air sprayed from the center portion

501 of the body **54**, the user may move the lever **324** to slide the inner door **320** and to throttle the apertures **55***a* in the center portion **501**.

[0056] The inner door **320** may be electrically driven. The inner door **320** may be communicated with the control panel **90** and may be manipulated according to a control signal from the control panel **90**.

[0057] The inner door **320** may be equipped to the one end portion **502** and/or the other end portion **503** of the body **54**.

Fourth Embodiment

[0058] As shown in FIG. **11**, a body **454** of an air shower device of the fourth embodiment has an inner wall equipped with multiple ribs **460**. The ribs **460** may be projected from the inner wall in the thickness direction to form multiple air passages **460***a* to extend radially from the opening **53***a* (FIG. **6**) at the center portion **501** of the body **454**.

[0059] The body **454** may be configured to draw conditioned air through the air passages **460***a* formed with the ribs **460** radially outward from the opening **53***a* at the center of the body **454**. Thus, the body **454** may be configured to distribute the conditioned air from the center of the body **454** radially outward.

Fifth Embodiment

[0060] The apertures may employ various shapes. As shown in FIG. **12**, a body **554** of an air shower device of the fifth embodiment may have an inner wall having multiple apertures **555***a*. Each of the apertures **555***a* may be an elongated slit extending in the longitudinal direction. The apertures **555***a* may be arranged along the width direction. In the example, the apertures **555***a* may become shorter from the center to ends in the width direction.

Sixth Embodiment

[0061] The air shower device may employ various configurations. For example, as shown in FIG. **13**, an upper bed (air shower bed) **612** may function as the air shower device. The upper bed **612** may be hollow and may be connected with the duct **28**. The upper bed **612** may be secured on the wall and may be horizontally installed. The upper bed **612** may be reinforced with metallic frames to bear a weight of a user. The upper bed **612** may be furnished with a cushion and/or a pillow and may be covered with fabric or leather. The upper bed **612** may have a structure similar to or identical to the air shower device according to one of the above-described embodiments. The upper bed **612** may be provided as an after market product. The upper bed **612** may be connected with the corresponding one of the ducts **26** and **28** by using an adaptor attachment and/or a flexible duct. The duct **26** and/or **28** may be of, for example, a ready-made car.

Seventh to Ninth Embodiments

[0062] The body of the air shower device may employ various shapes to form various internal spaces.

[0063] As shown in FIG. **14**, a body **754** may have an upper wall **763** slightly protruded at the center portion **501**. In the example, the upper wall **763** may be in a pyramid shape to reduce in the internal space **754***a* from the center portion **501** toward both the one end portion **502** and the other end portion **503**. The center portion **501** may define the opening **53***a*.

[0064] As shown in FIG. **15**, a body **854** may have an upper wall **863** slightly protruded at the one end portion **502**. In the example, the upper wall **863** may be in an eccentric pyramid shape to reduce in the internal space **854***a* from the one end portion **502** through the center portion **501** toward the other end portion **503**. The one end portion **502** may define the opening **53***a*.

[0065] As shown in FIG. **16**, a body **954** may have an upper wall **963** slightly protruded at the one end portion **505**. In the example, the upper wall **863** may be in an eccentric pyramid shape to reduce in the internal space **954***a* from the one end portion **502** through the center portion **501** toward the other end portion **503**. The one end portion **502** may define an opening **953***a* at a lateral side of the one end portion **502**.

[0066] In the examples of FIGS. **14** to **16**, the body may reduce in internal space from the opening toward the farther region. Airflow from the opening may decrease in velocity due to pressure loss through the internal space. In the examples, the internal space may reduce toward the farther region correspondingly to decrease in velocity and in a quantity of airflow thereby to enable the airflow to be distributed to the farther region uniformly.

Other Embodiment

[0067] The HVAC unit **16** may be located at various positions in the vehicle other than the position under the lower bed **14**. The HVAC unit **16** may be located under a dashboard of the vehicle. In addition to the HVAC unit **16**, an additional HVAC unit may be equipped in the vehicle for, for example, the front passenger compartment.

[0068] The opening **53***a* may be located in one end portion **502** of the body **54**, which is other than the center portion **501** and the other end portion **503** of the body **54**. In this case, the apertures **55***a* may be distributed densely in the center portion **501** and the other end portion **503** of the body **54** and may be distributed sparsely in the one end portion **502**. Alternatively, in this case, the apertures **55***a* may be distributed sparsely in the center portion **501** and the other end portion **503** of the body **54** and may be distributed densely in the one end portion **502**. The one end portion **502** may correspond to the head of a user.

[0069] The control panel **90** may be wired with or wirelessly communicated with the HVAC unit **16**. The control panel **90** may be equipped to the air shower device **50**.

[0070] The third embodiment may be combined with the second embodiment to include the inner door **320** and at least one of the inner doors **220** and **240** in the body **54**.

[0071] The upper bed **12** and the air shower device **50** for the upper bed **12** may be omitted.

[0072] The air shower device **50** may be equipped with an electric heater and/or an electric cooler to heat and/or cool air conducted through the air shower device **50**.

[0073] The wording of the upper and the lower do not limit the position of the relevant components. The components in the embodiments may be in various positions.

[0074] At least one of the ducts **26** and **28** may be in the cabin.

[0075] It should be appreciated that while the processes of the embodiments of the present disclosure have been described herein as including a specific sequence of steps, further alternative embodiments including various other

sequences of these steps and/or additional steps not disclosed herein are intended to be within the steps of the present disclosure.

[0076] While the present disclosure has been described with reference to preferred embodiments thereof, it is to be understood that the disclosure is not limited to the preferred embodiments and constructions. The present disclosure is intended to cover various modification and equivalent arrangements. In addition, while the various combinations and configurations, which are preferred, other combinations and configurations, including more, less or only a single element, are also within the spirit and scope of the present disclosure.

What is claimed is:

1. An air shower device comprising:
a body being hollow and defining an internal space, wherein
the body has an upper wall and a lower wall, which are opposed to each other,
the upper wall has an opening extending though the upper wall,
the lower wall has a plurality of apertures extending though the lower wall, and
the body is configured to draw air from the opening to conduct the air through the internal space and to spray the air from the internal space through the apertures to an outside of the body.

2. The air shower device of claim **1**, wherein
the body is in a flat planer shape extending in width and longitudinal directions, and
the body is configured to conduct the air through the internal space in the width and longitudinal directions.

3. The air shower device of claim **1**, wherein
the upper portion has a coupler configured to be coupled with a support arm.

4. The air shower device of claim **1**, wherein
the opening is configured to be coupled with a duct.

5. The air shower device of claim **1**, wherein
the apertures are distributed densely in a center portion of the body and are distributed sparsely in a portion other than the center portion of the body.

6. The air shower device of claim **1**, wherein
the apertures are distributed densely in one end portion of the body and are distributed sparsely in a portion other than the one end portion of the body.

7. The air shower device of claim **1**, wherein
the opening is located in a center portion of the body

8. The air shower device of claim **1**, wherein
the opening is located in one end portion of the body, and
the apertures are distributed densely in a portion other than the one end portion of the body and are distributed sparsely in the one end portion.

9. The air shower device of claim **1**, wherein
the body has a door configured to throttle the internal space.

10. The air shower device of claim **9**, wherein
the door is rotational about an axis to throttle the internal space.

11. The air shower device of claim **1**, wherein
the body has a door slidable along a longitudinal direction of the body to throttle the apertures.

12. The air shower device of claim **1**, wherein
the body has an upper portion and a lower portion, which are combined to each other to form the internal space therebetween,
the upper portion is in a bottomed tray shape having the upper wall,
the lower portion is in a bottomed tray shape having the lower wall,
the upper wall is substantially flat, and
the lower wall is substantially flat.

13. The air conditioning device of claim **1**, wherein
the upper wall is protruded at one of a center portion and one end of the body, and
the opening is located at the one of the center portion of the body and the one end of the body.

14. An air conditioning device comprising:
an air conditioning unit; and
an air shower device connected with the air conditioning unit, wherein
the air shower device includes a body being hollow and defining an internal space,
the body has an upper wall and a lower wall, which are opposed to each other,
the upper wall has an opening extending though the upper wall,
the lower wall has a plurality of apertures extending though the lower wall, and
the body is configured to draw air from the opening to conduct the air through the internal space and to spray the air from the internal space through the apertures to an outside of the body.

15. The air conditioning device of claim **14**, wherein
the air shower device is supported by a wall via a support arm,
the support arm enables the air shower device to be folded on the wall and to be placed along the wall, and
the support arm enables the air shower device to be unfolded from the wall and to be extended from the wall.

16. The air conditioning device of claim **14**, wherein
the opening is coupled with a duct connected with the air conditioning unit, and
the duct is expandable or retractable.

17. An air shower bed comprising:
a body being hollow and defining an internal space, wherein
the body has an upper wall and a lower wall, which are opposed to each other,
the upper wall has an opening extending though the upper wall,
the lower wall has a plurality of apertures extending though the lower wall,
the body is configured to draw air from the opening to conduct the air through the internal space and to spray the air from the internal space through the apertures to an outside of the body, and
the body is configured to enable a user to lie on the bed.

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