US 20200132337A1

(19) **United States**

(12) **Patent Application Publication**

KELLY et al.

(10) **Pub. No.: US 2020/0132337 A1**

(43) **Pub. Date: Apr. 30, 2020**

(54) **COVERS FOR AIR CONDITIONER UNITS**

(71) Applicants: **Robert Scott KELLY**, Inver Grove Heights, MN (US); **Kenneth James SCHULTZ**, Carver, MN (US)

(72) Inventors: **Robert Scott KELLY**, Inver Grove Heights, MN (US); **Kenneth James SCHULTZ**, Carver, MN (US)

(21) Appl. No.: **16/670,489**

(22) Filed: **Oct. 31, 2019**

Related U.S. Application Data

(60) Provisional application No. 62/753,206, filed on Oct. 31, 2018.

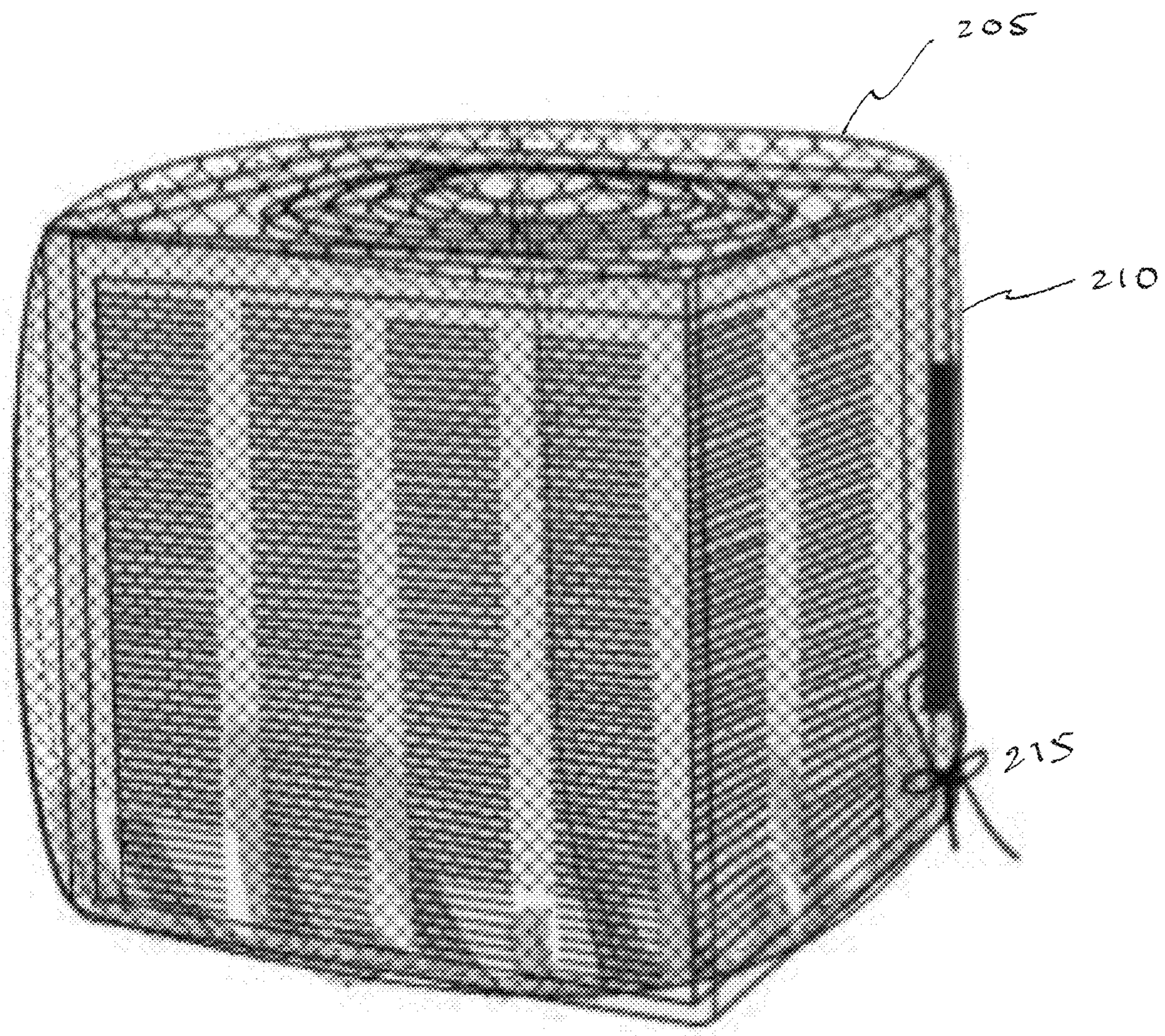
Publication Classification

(51) **Int. Cl.**
F24F 13/20 (2006.01)

(52) **U.S. Cl.**
CPC ***F24F 13/20*** (2013.01); *F24F 2013/202* (2013.01)

(57) **ABSTRACT**

Embodiments of the present disclosure describe covers for air conditioner units comprising a first air permeable panel for covering a horizontal top panel of an air conditioner unit; a second air permeable panel extending downward from the first air permeable panel for covering vertical side panels of the air conditioner unit; and an adjustable fastener provided in a bottom portion of the second air permeable panel for securing the cover to a base of the air conditioner unit.



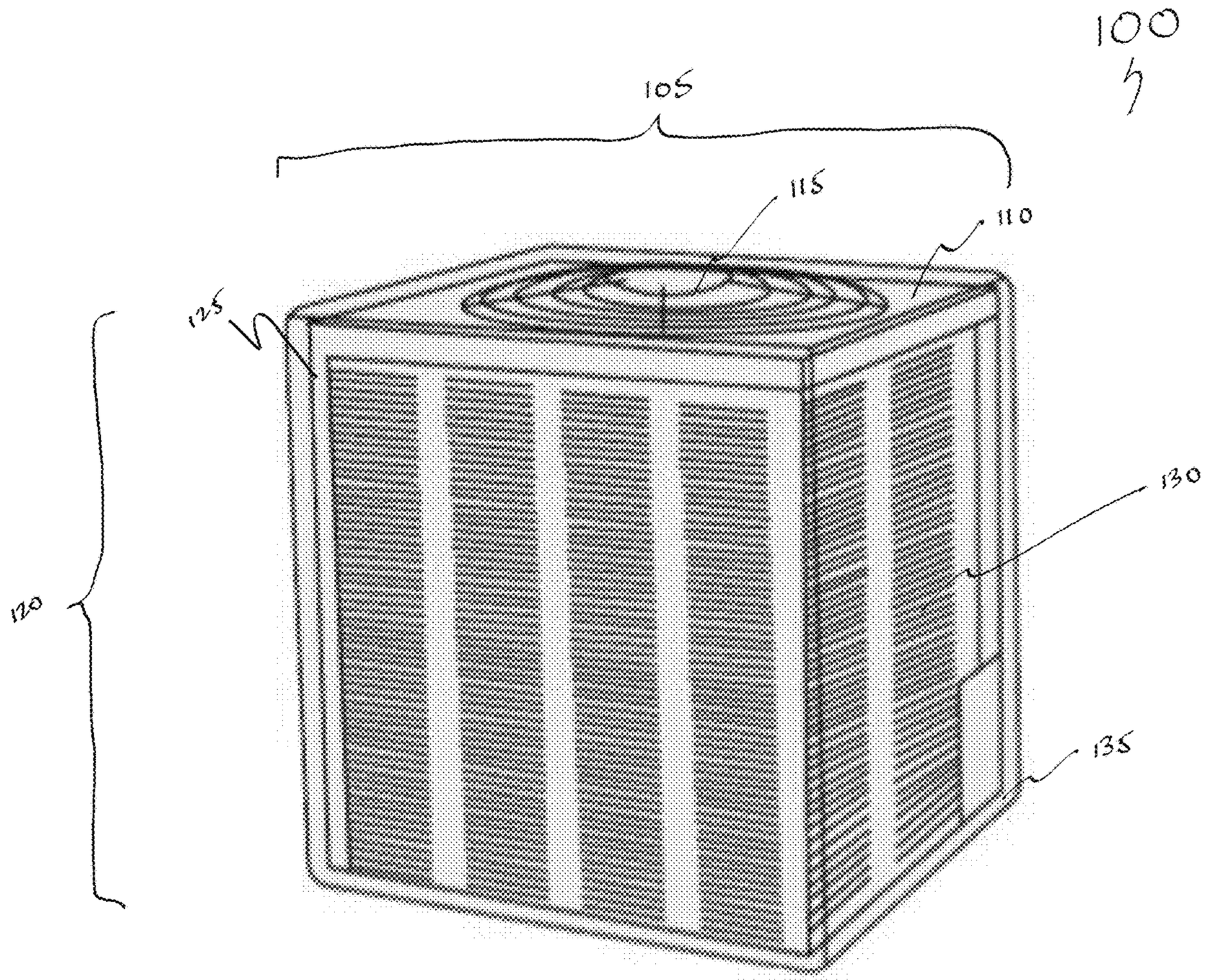


FIG. 1

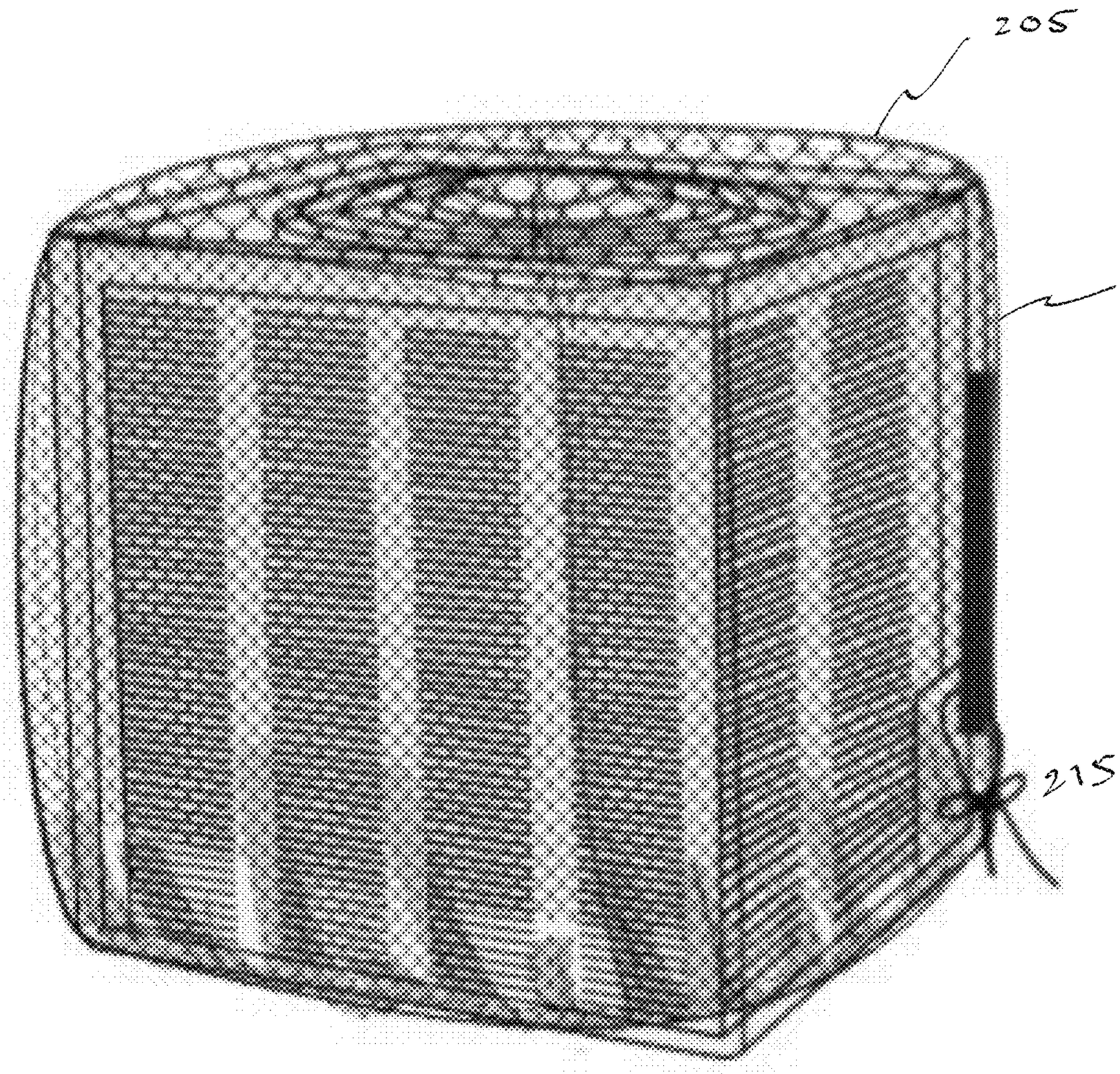


FIG. 2

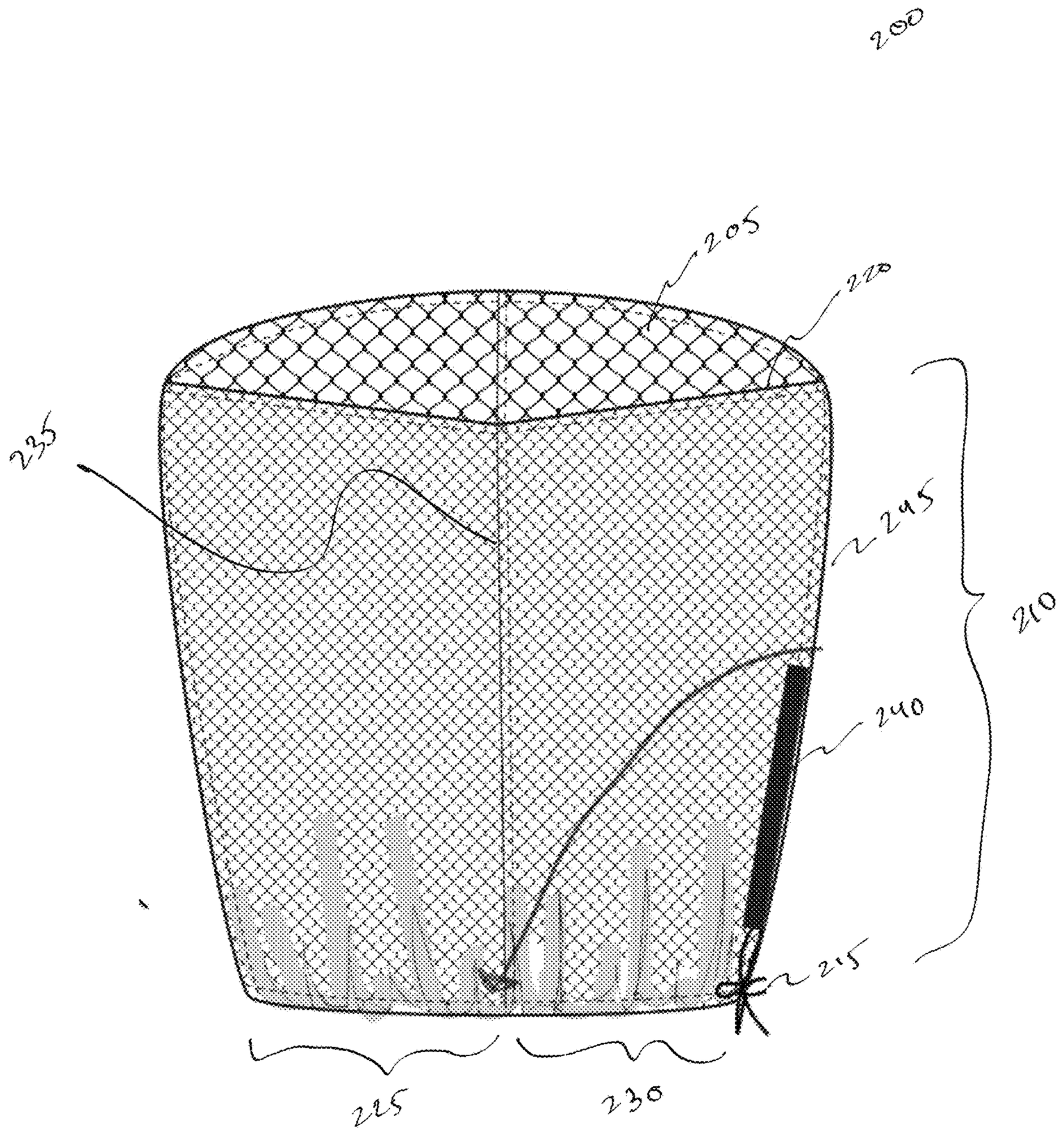


FIG. 3

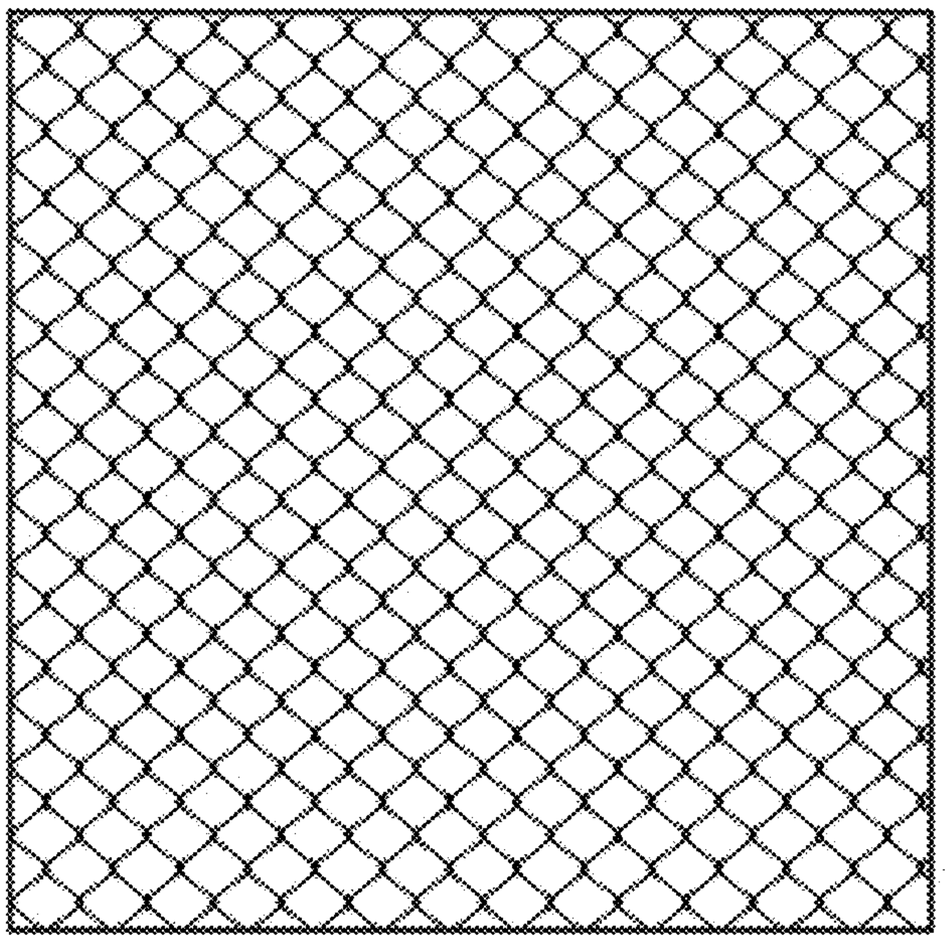


FIG. 4

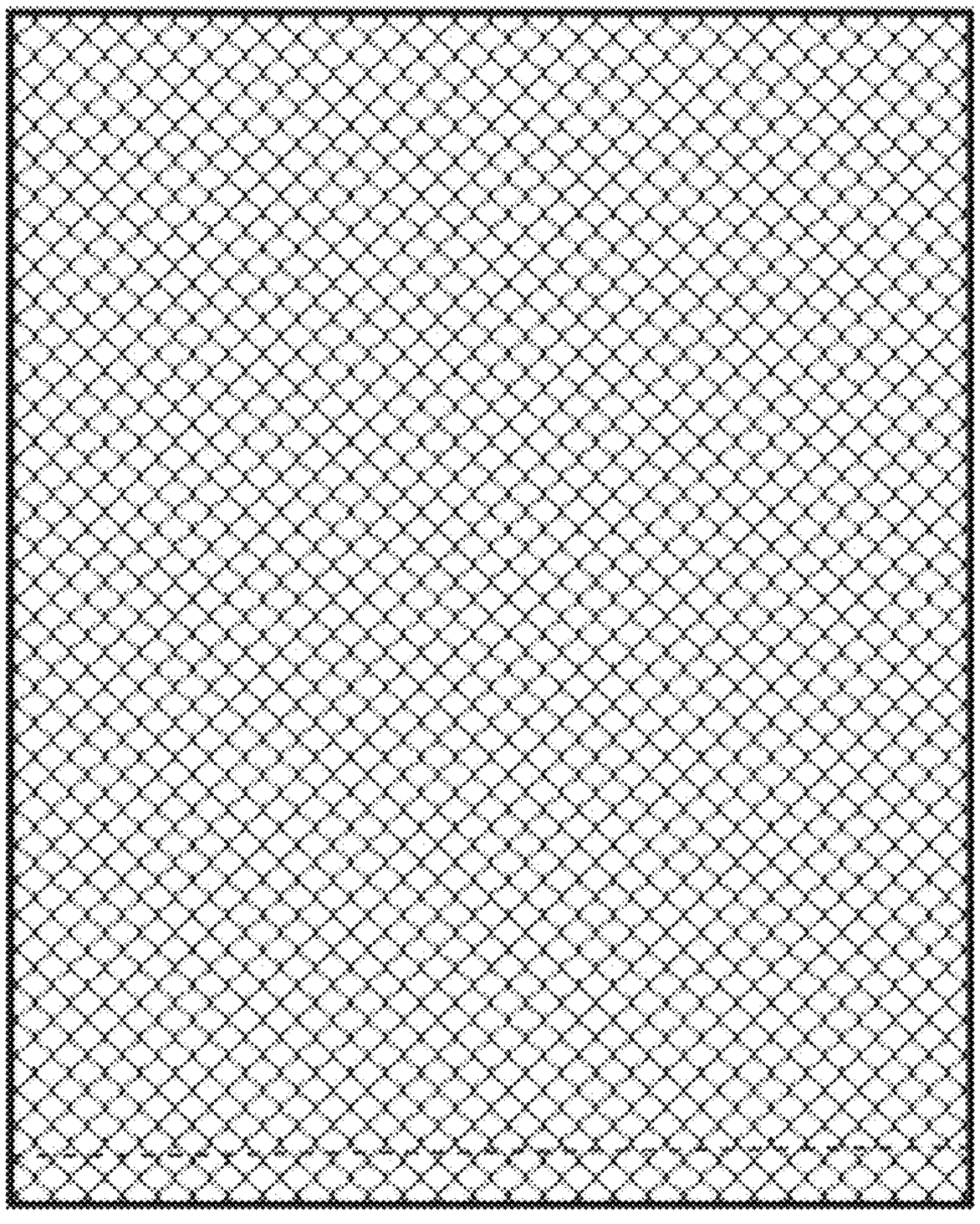


FIG. 5

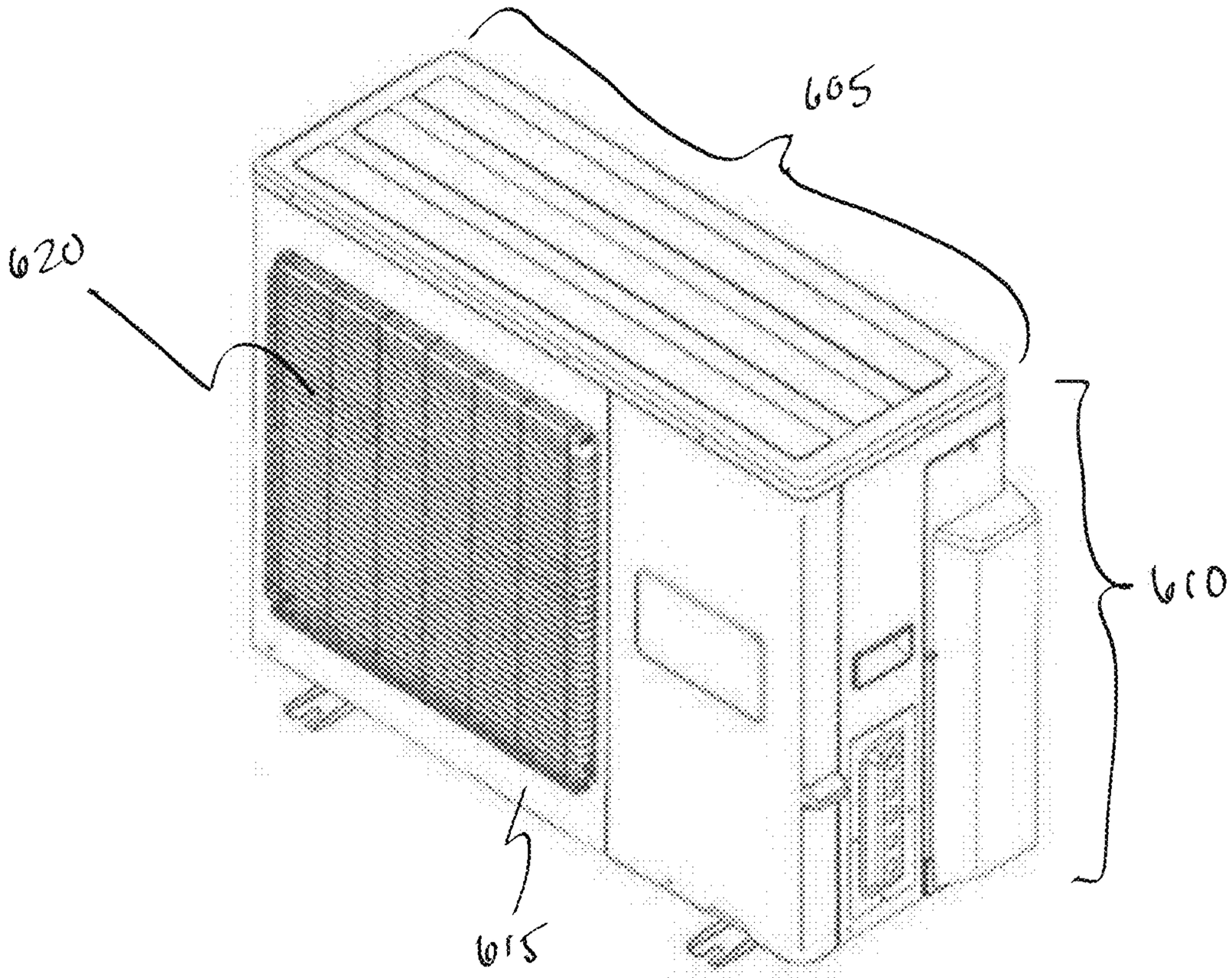


FIG. 6

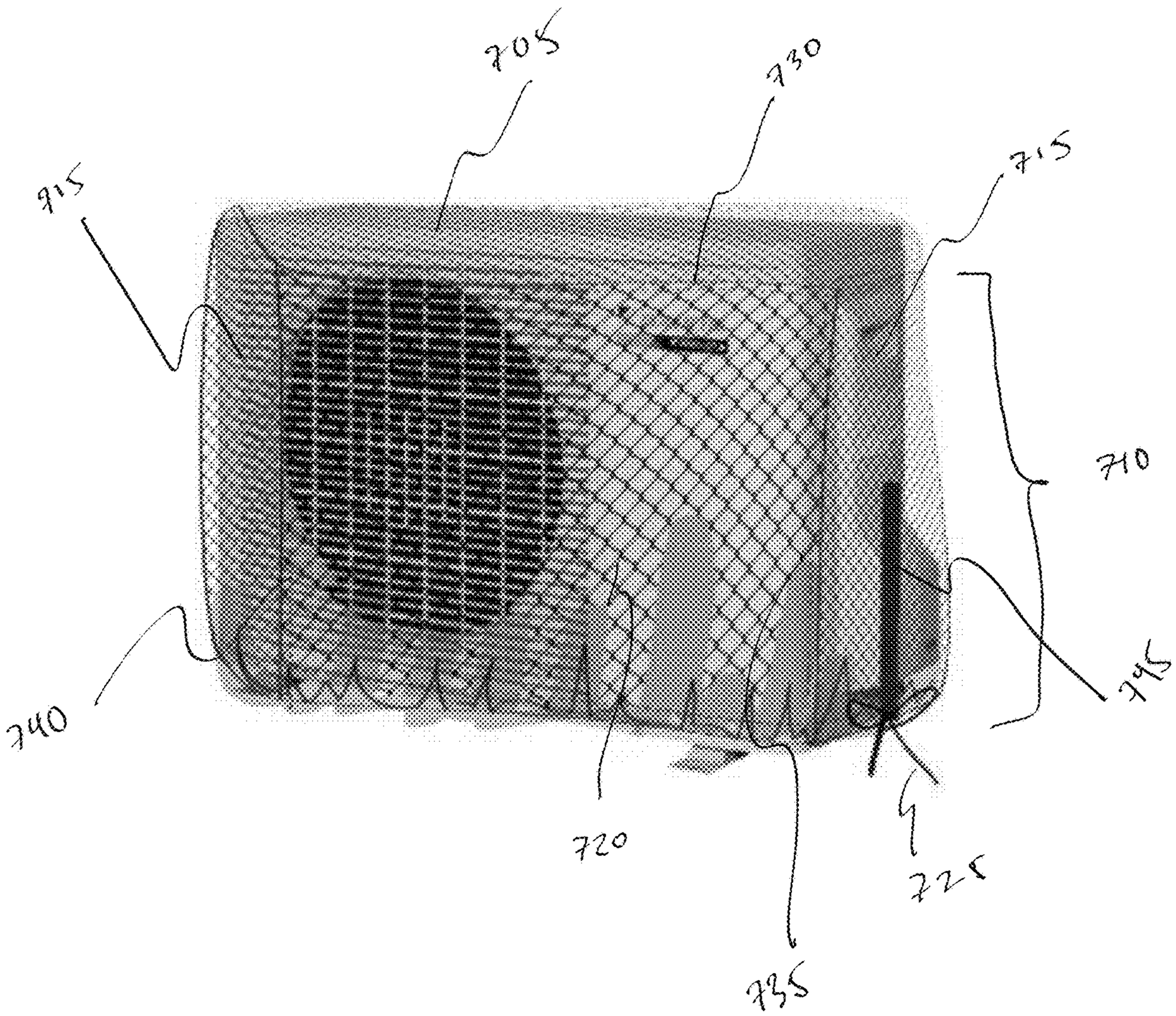
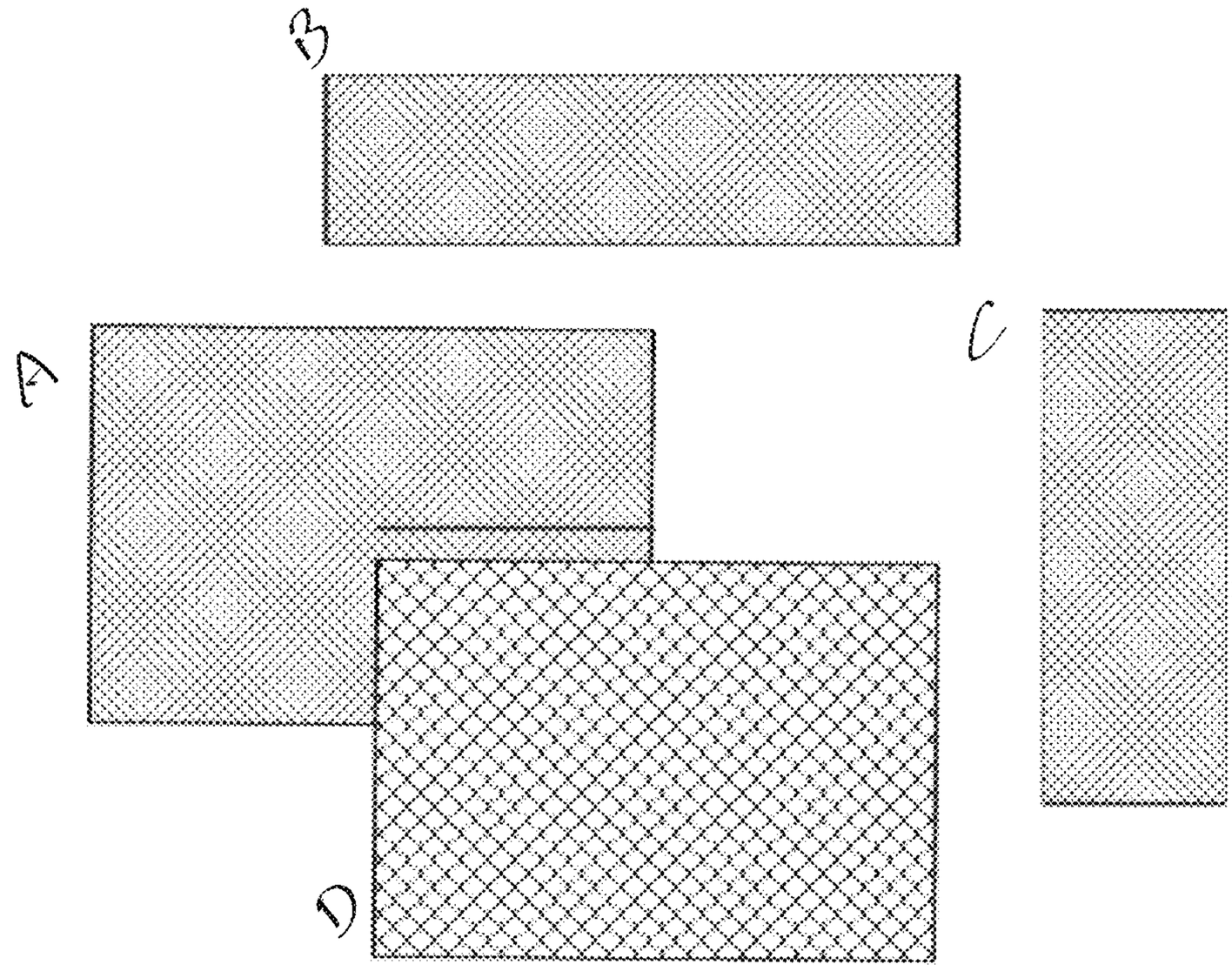


FIG. 7



FIGS. 8A-8D

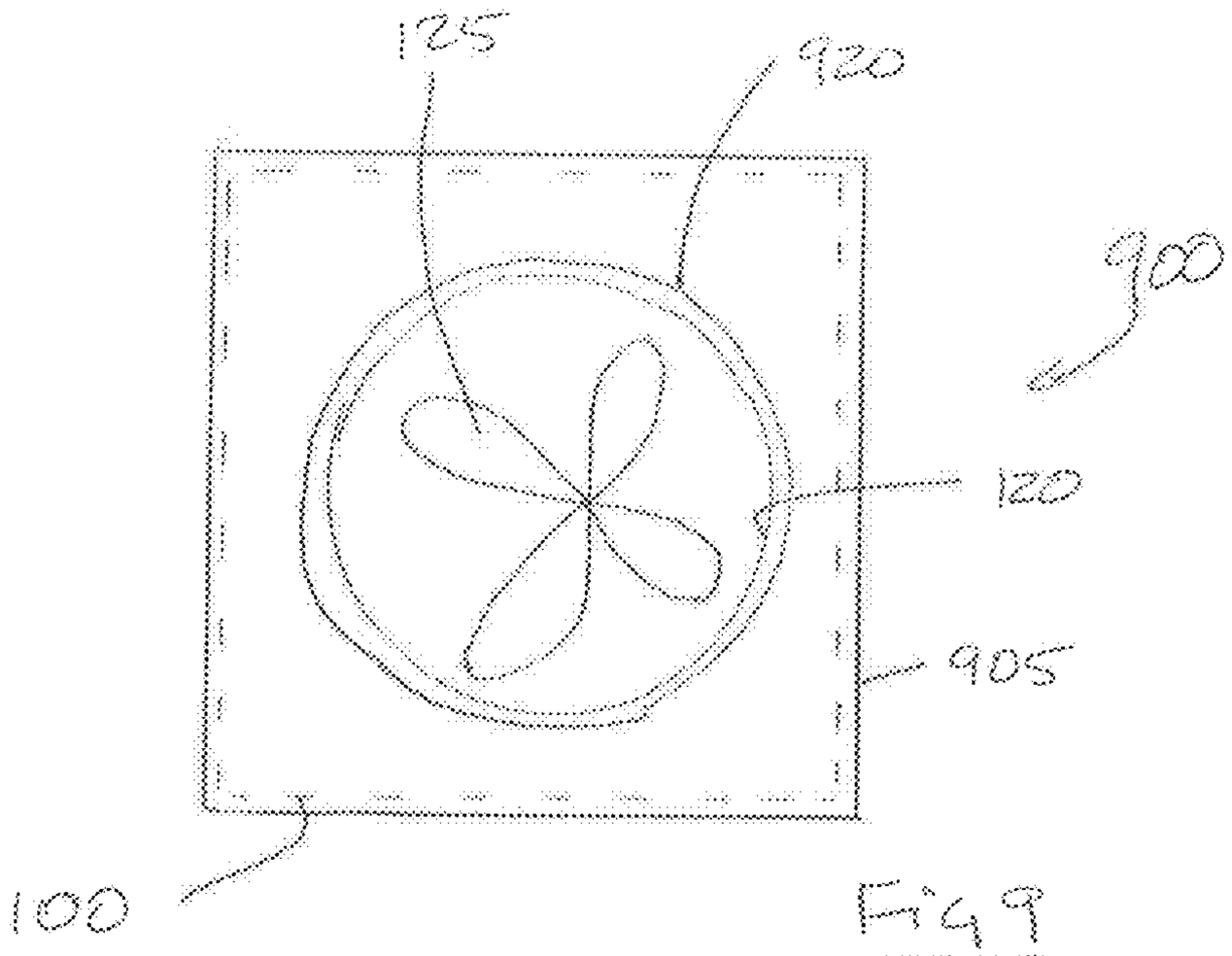


Fig 9

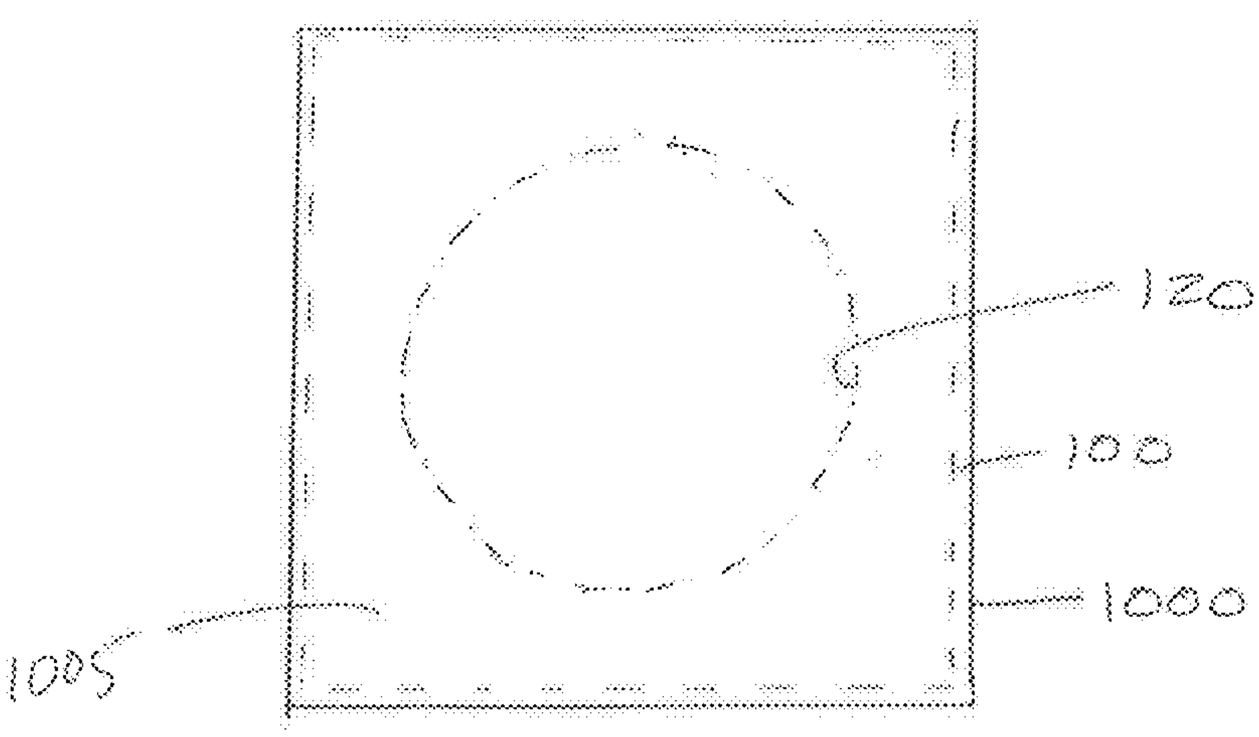


Fig 10

COVERS FOR AIR CONDITIONER UNITS

BACKGROUND

[0001] Air conditioner units are typically exposed to elements from indoor and/or outdoor environments that can cause damage or impair operation of the units. Conventional covers are available, but they are designed to completely enclose the air conditioner unit, without allowing any air flow into or out of the air conditioner unit. As air flow is required to release cooled air and discharge heat, such covers thus reduce the efficiency of the air conditioner unit during normal operation and can even entirely prevent the air conditioner from operating. Accordingly, it would be desirable to provide a cover for air conditioner units that is capable of serving as a protective element, without diminishing the performance and/or operation of the air conditioner unit.

SUMMARY

[0002] In general, embodiments of the present disclosure describe covers for air conditioner units and the like.

[0003] Embodiments of the present disclosure describe a cover for an air conditioner unit comprising a first air permeable panel for covering a horizontal top panel of an air conditioner unit; a second air permeable panel extending downward from the first air permeable panel for covering vertical side panels of the air conditioner unit; and an adjustable fastener provided in a bottom portion of the second air permeable panel for securing the cover to a base of the air conditioner unit.

[0004] Embodiments of the present disclosure further describe a cover for an air conditioner window unit comprising a first air permeable panel for covering a horizontal top panel of an air conditioner unit, wherein the first air permeable panel includes a first material; a second air permeable panel extending downward from the first air permeable panel for covering vertical side panels of the air conditioner unit, wherein the second air permeable panel includes a first section with the first material and a second section with a second material that is different from the first material; and an adjustable fastener provided in a bottom portion of the second air permeable panel for securing the cover to a base of the air conditioner unit.

[0005] The details of one or more examples are set forth in the description below. Other features, objects, and advantages will be apparent from the description and from the claims.

BRIEF DESCRIPTION OF DRAWINGS

[0006] This written disclosure describes illustrative embodiments that are non-limiting and non-exhaustive. In the drawings, which are not necessarily drawn to scale, like numerals describe substantially similar components throughout the several views. Like numerals having different letter suffixes represent different instances of substantially similar components. The drawings illustrate generally, by way of example, but not by way of limitation, various embodiments discussed in the present document.

[0007] Reference is made to illustrative embodiments that are depicted in the figures, in which:

[0008] FIG. **1** is a schematic drawing showing a perspective view of a conventional air conditioner unit, according to one or more embodiments of the present disclosure.

[0009] FIG. **2** is a schematic drawing showing a perspective view of a cover on an air conditioner unit, according to one or more embodiments of the present disclosure.

[0010] FIG. **3** is a schematic drawing showing a side view of a cover on an air conditioner unit, according to one or more embodiments of the present disclosure.

[0011] FIG. **4** is a schematic drawing of an air permeable material, according to one or more embodiments of the present disclosure.

[0012] FIG. **5** is a schematic drawing of an air permeable material, according to one or more embodiments of the present disclosure.

[0013] FIG. **6** is a schematic drawing showing a perspective view of a conventional air conditioner window unit, according to one or more embodiments of the present disclosure.

[0014] FIG. **7** is a schematic drawing showing a perspective view of a cover on an air conditioner window unit, according to one or more embodiments of the present disclosure.

[0015] FIGS. **8**A-**8**D are schematic drawings showing air permeable materials, with (A-C) showing a first material and (D) showing a second material, according to one or more embodiments of the present disclosure.

[0016] FIG. **9** is a top view of an air permeable material, according to one or more embodiments of the present disclosure.

[0017] FIG. **10** is a view of a winter cover that can be used in colder climates where snow occurs during part of the year, according to an example embodiment.

DETAILED DESCRIPTION

[0018] Embodiments of the present disclosure describe covers for air conditioner units comprising one or more of the following: a first air permeable panel for covering a horizontal top panel of an air conditioner unit, a second air permeable panel extending downward from the first air permeable panel for covering vertical side panels of the air conditioner unit, and an adjustable fastener for securing the cover to the air conditioner unit.

[0019] The first air permeable material and the second air permeable material can be made of the same material or different materials. For example, the first air permeable panel and the second air permeable panel can be made of the same material (e.g., a single material). Alternatively, the first air permeable panel, or a part thereof, can be made of a material that is different from a material forming the second air permeable panel, or a part thereof. In addition, the first air permeable panel can be made entirely of the same material (e.g., a single material) or it can be made of a combination of materials (e.g., two or more materials). The second air permeable panel can similarly be made entirely of the same material (e.g., a single material) or it can be made of a combination of materials (e.g., two or more materials).

[0020] Each of the first air permeable panel and the second air permeable panel can generally include one or more sections. One or more sections, for example, can be added or removed from any given cover to adapt the covers described herein to air conditioner units of various sizes, geometries, and configurations, and to achieve desired fits. The one or more sections of the first air permeable panel and the second air permeable panel can be made of the same material or different materials. The one or more sections can also generally be connected by one or more seams (not

shown). The seams can be used to provide covers as continuous or substantially continuous materials. For example, embodiments of the present disclosure describe covers comprising a first air permeable panel including one or more sections connected by one or more seams and a second air permeable panel including one or more sections connected by one or more seams. The seams can be made of any suitable material. In an embodiment, the seams are made of an elastic material, a velcro material, a combination thereof, or other such suitable materials.

[0021] The adjustable fastener can include any material suitable for securing the cover to the air conditioner unit. For example, the adjustable fastener can include drawstring, elastic, hooks, latches, or combinations thereof. The positioning of the adjustable fastener on the cover is not particularly limited and can be provided in any location convenient for securing the cover the air conditioner unit. For example, in an embodiment, the adjustable fastener is provided in a bottom portion of the second air permeable panel for securing the cover to a base of the air conditioner unit.

[0022] Although reference is made below to covers for certain air conditioner units, the covers of the present disclosure are not particularly limited in size, shape, configuration, and fit and thus such discussion shall not be limiting. The covers can be adapted to fit air conditioner units of a wide variety of sizes, shapes, and configurations.

[0023] A perspective view of a conventional air conditioner unit **100** is shown in FIG. **1**, according to one or more embodiments of the present disclosure. As shown in FIG. **1**, the conventional air conditioner unit **100** comprises a horizontal top panel **105** and one or more vertical side panels **120**. The horizontal top panel **105** can include a top surface **110** with a centralized discharge grill **115** enclosing a fan (not shown). Heat generated during operation of the air conditioner unit **100** can be discharged through the grill **115**. The one or more of the vertical side panels **120** can include vertical surfaces **125** with vented air intakes **130**. Cooling air can be supplied through the vented air intakes **130** to the air conditioner unit **100**. The air conditioner unit **100** can further comprise a base **135**, which can be provided on or near a bottom portion of the air conditioner unit **100**. The air conditioner unit **100** may include other elements and components known in the art. They have been omitted from the present discussion for clarity.

[0024] A perspective view of a cover **200** provided on the air conditioner unit **100** is shown in FIG. **2**, according to one or more embodiments of the present disclosure. As shown in FIG. **2**, the cover **200** can comprise one or more of the following: a first air permeable panel **205** for covering a horizontal top panel **105** of an air conditioner unit **100**, a second air permeable panel **210** extending downward from the first air permeable panel **205** for covering vertical side panels **120** of the air conditioner unit **100**, and an adjustable fastener **215** provided in a bottom portion of the second air permeable panel **210** for securing the cover to a base **135** of the air conditioner unit **100**.

[0025] A side view of the cover **200** provided on the air conditioner unit **100** is shown in FIG. **3**, according to one or more embodiments of the present disclosure. As shown in FIG. **3**, the cover **200** can comprise a first air permeable panel **205** connected to the second air permeable panel **210** by seam **220**. The second air permeable panel **210** can include a first section **225** and a second section **235** connected by seam **235**. The adjustable fastener **215** can be provided in a bottom portion of the second air permeable panel **210** for securing the cover **200** to a base **135** of the air conditioner unit **100**. An adjustable element **240**, such as velcro, can be provided on or near seam **245** above the adjustable fastener **215** to allow the cover **200** to be fitted and/or secured to the air conditioner unit **100**.

[0026] The first air permeable panel **205** and the second air permeable panel **210** can be made of the same material or different materials. In an embodiment, the first air permeable panel **205** is made of a first material and the second air permeable panel **210** is made of a second material that is different from the first material. For example, in an embodiment, the first air permeable material **205** can be represented by a material **400** shown in FIG. **4**; and the second air permeable material **210** can be represented by a material **500** shown in FIG. **5**. The first material, second material, or both can be made of a stretchable material or fabric. In an embodiment, each of the first material and the second material can be independently selected from the group consisting of power mesh, cabaret stretch mesh, and honeycomb mesh, among other types of materials and fabrics. Alternatively, in an embodiment, the first air permeable panel **205** and the second air permeable panel **210** are made of the same material, which can include any of the first materials or second materials described herein.

[0027] The first air permeable panel **205** and the second air permeable panel **210** can be characterized by an average pore size. For example, the material—either the first material or the second material—of the first air permeable panel and/or the second air permeable panel can be selected based on an average pore size of the fabric. The average pore sizes can range from about 1 mm to about 1 cm. In an embodiment, the average pore size of the first air permeable panel is greater than an average pore size of the second air permeable panel. For example, in an embodiment, the average pore sizes of the first air permeable panel **205** and the second air permeable panel **210** are 1 cm and 1 mm, respectively.

[0028] The material of the first air permeable panel **205** and the second air permeable panel **210** can further be selected to maintain a desired flow rate of air entering and exiting the air conditioner unit. The desired flow rate of the first air permeable panel **205** can be different from, or the same as, the desired flow rate of the second air permeable panel **210**. In an embodiment, a desired flow rate of the first air permeable panel is about 1300 $ft^3\ min^{-1}$. The flow rate of either the first air permeable panel **205** or the second air permeable panel **210** is not particularly limited. Accordingly, the flow rates of either panel can be greater than or less than about 1300 $ft^3\ min^{-1}$.

[0029] A perspective view of a conventional air conditioner window unit **600** is shown in FIG. **6**, according to one or more embodiments of the present disclosure. As shown in FIG. **6**, the conventional air conditioner window unit **600** comprises a horizontal top panel **605** and one or more vertical side panels **610**. The one or more vertical side panels can include a first vertical panel **615** with vents **620** through which warm air from indoors enters the air conditioner unit **600** and cooled air exits or returns to the indoor space. The vertical side panels can include a second vertical panel **625** (not shown) with vents **630** through which heat can be discharged from the air conditioner unit **600**.

[0030] A perspective view of a cover **700** provided on the air conditioner unit **700** is shown in FIG. **7**, according to one

or more embodiments of the present disclosure. As shown in FIG. **7**, the cover **700** can comprise one or more of the following: a first air permeable panel **705** for covering a horizontal top panel **605** of an air conditioner unit **600**, wherein the first air permeable panel **705** includes a first material; a second air permeable panel **710** extending downward from the first air permeable panel **705** for covering vertical side panels **610** of the air conditioner unit **600**, wherein the second air permeable panel **710** includes a first section **715** including the first material and a second section **720** including a second material that is different from the first material; and an adjustable fastener **715** provided in a bottom portion of the second air permeable panel **710** for securing the cover to a base of the air conditioner unit **600**.

[0031] The first air permeable panel, the second air permeable panel, any sections thereof can be connected by one or more seams. For example, in an embodiment, the first air permeable panel **705** can be connected to the second air permeable panel by seam **730**; and the second section **720** of the second air permeable panel can be connected to the first section **715** of the second air permeable panel by seams **735** and **740**.

[0032] The second section **720** can be provided in any suitable area of the cover **700**. For example, in an embodiment, the second section **720** including the second material is provided in an area of the cover **700** that allows the second section **720** to cover the first vertical panel **615** of the air conditioner unit **600**. In an embodiment, the second section **720** including the second material is further provided in an area of the cover **700** that allows the second section **720** to cover the second vertical panel **625** of the air conditioner unit **600**.

[0033] The first material, second material, or both can be made of any of the materials described herein, such as stretchable fabric. In an embodiment, the first material and the second material can be selected from the group consisting of power mesh, cabaret stretch mesh, and honeycomb mesh. In an embodiment, the first material can be represented by the material shown in FIGS. **8**A-**8**C, and the second material can be represented by the material shown in FIG. **8**D.

[0034] The first material and the second material can be characterized by an average pore size and can be selected to maintain a desired flow rate of air entering and exiting the air conditioner unit. For example, in an embodiment, the second material of the second section **720** can be characterized by an average pore size that is greater than an average pore size of the first material included in the first section **715** of the second air permeable panel and the first air permeable panel **705**. For example, an average pore size of the first material can be about 1 mm and an average pore size of the second material can be about 1 cm. In an embodiment, the second material can maintain an air flow of about 1300 ft^3 min^1.

[0035] The adjustable fastener **725** can be provided in a bottom portion of the second air permeable panel **710** for securing the cover **700** to the air conditioner unit **600**. The adjustable fastener **725** can include any of the materials described herein. For example, in an embodiment, the adjustable fastener is elastic or a drawstring. An adjustable element **745**, such as velcro, can be provided above the adjustable fastener **725** to allow the cover **700** to be fitted and/or secured to the air conditioner unit **600**.

[0036] FIG. **9** is top view of another embodiment if a cover **900** provided for an air conditioning unit, such as air conditioner unit **100** is shown in FIG. **1**, according to another example embodiment. As shown in FIG. **9**, a first air permeable panel **905** for covering the horizontal top panel **105** of an air conditioner unit **100** (shown in FIG. **1**) is shown. The first air permeable panel **905** is made of a substantially non stretch fabric such as canvas or cordura nylon. The fabric is durable. In some embodiments, corners can be fashioned with the non-stretch of low stretch fabric which correspond to the corners of the top panel **105** of the air conditioner **100** (shown in FIG. **1**). The corners so fashioned will fit over the corners of the top panel **105** to hold it in place. In other embodiments, the first air permeable panel can be provided with other means for attaching to the horizontal panel **105**. For example, straps could be placed at the corners designed and dimension to attach to the corners of the horizontal top panel of the air conditioning unit **100**. The first air permeable panel **905** has an exhaust opening **920** therein. The exhaust opening **920** allows for a cover that will not substantially interfere with the flow from an exhaust port **120** of the air conditioning unit **100**. As shown in FIG. **9**, an air handler **125** is positioned near the exhaust port **120** to draw air through the heat exchange fins of the air conditioner and out the exhaust port **120**. The opening **920** in the first air permeable panel **905** for covering the horizontal top panel **105** is equal to or greater than the opening of the exhaust port **120** of the air conditioning unit **100**. As shown in FIG. **9**, the opening **920** is completely open. It should be understood that there may be some structure that crosses the opening, such as a wire, that helps to maintain the shape of the opening **920** in the panel **905**. In these embodiments, the idea is to keep the opening **120** in the air conditioning unit substantially open to allow for maximum or the designed amount of airflow out the exhaust port so the maximum heat can be removed from the fluid in the refrigeration cycle. In other embodiments, the opening **920** may include a hoop of structural material. The second air permeable panel **210** or panels extends downward from the first air permeable panel **905** for covering vertical side panels **120** of the air conditioner unit **100**, and an adjustable fastener **215** provided in a bottom portion of the second air permeable panel **210** for securing the cover to a base **135** of the air conditioner unit **100**. It should be noted that the second air permeable panels can be provided with various sizes of mesh to prevent various problems. For example, in some environments, the "cotton" from a cottonwood tree can be drawn into the air flow through the air conditioning unit **100**. The "cotton" can foul the cooling fins. In such an environment, a cover might include a second permeable panel **205** with fine enough mesh to catch the "cotton" from a cottonwood tree. Of course, the cover must be designed to provide with sufficient sized openings to allow enough air to be drawn through the heat rejection unit so that the refrigerant can be sufficiently cooled.

[0037] FIG. **10** is a view of a winter cover **1000** that can be used in colder climates where snow occurs during part of the year, according to an example embodiment. The winter cover will prevent or substantially prevent snow from entering the exhaust port **120** of the air conditioning unit **100**. The air conditioning unit **100** and the exhaust port **120** are shown in phantom in FIG. **10** as they are beneath the cover **1000**. The cover **1000** includes a substantially thick and durable panel **1005** that can withstand a snow load across the exhaust

port **120** opening in an air conditioner. **100**. The cover **1000** can attach to the air conditioner or the corners of the air conditioner so that it will remain in place in the event of windstorms, blizzards, and the like. The cover **1000** can be placed over the horizontal panel **105** of the air conditioner without one of the covers, or can be placed directly over a cover, such as covers **500**, **900** or **200**

[0038] While embodiments of the present disclosure are described with respect to examples of conventional air conditioner units, a person skilled in the art will readily appreciate that the covers described herein can be adapted to fit air conditioner units of a variety of sizes, shapes, and configurations and to achieve different fits. Accordingly, the description of any specific covers and/or air conditioners in the present disclosure shall not be limiting.

[0039] Other embodiments of the present disclosure are possible. Although the description above contains much specificity, these should not be construed as limiting the scope of the disclosure, but as merely providing illustrations of some of the presently preferred embodiments of this disclosure. It is also contemplated that various combinations or sub-combinations of the specific features and aspects of the embodiments may be made and still fall within the scope of this disclosure. It should be understood that various features and aspects of the disclosed embodiments can be combined with or substituted for one another in order to form various embodiments. Thus, it is intended that the scope of at least some of the present disclosure should not be limited by the particular disclosed embodiments described above.

[0040] Thus the scope of this disclosure should be determined by the appended claims and their legal equivalents. Therefore, it will be appreciated that the scope of the present disclosure fully encompasses other embodiments which may become obvious to those skilled in the art, and that the scope of the present disclosure is accordingly to be limited by nothing other than the appended claims, in which reference to an element in the singular is not intended to mean "one and only one" unless explicitly so stated, but rather "one or more." All structural, chemical, and functional equivalents to the elements of the above-described preferred embodiment that are known to those of ordinary skill in the art are expressly incorporated herein by reference and are intended to be encompassed by the present claims. Moreover, it is not necessary for a device or method to address each and every problem sought to be solved by the present disclosure, for it to be encompassed by the present claims. Furthermore, no element, component, or method step in the present disclosure is intended to be dedicated to the public regardless of whether the element, component, or method step is explicitly recited in the claims.

[0041] The foregoing description of various preferred embodiments of the disclosure have been presented for purposes of illustration and description. It is not intended to be exhaustive or to limit the disclosure to the precise embodiments, and obviously many modifications and variations are possible in light of the above teaching. The example embodiments, as described above, were chosen and described in order to best explain the principles of the disclosure and its practical application to thereby enable others skilled in the art to best utilize the disclosure in various embodiments and with various modifications as are suited to the particular use contemplated. It is intended that the scope of the disclosure be defined by the claims appended hereto

[0042] Various examples have been described. These and other examples are within the scope of the following claims.

What is claimed is:

1. A cover for an air conditioner unit, comprising:

a first air permeable panel for covering a horizontal top panel of an air conditioner unit;

a second air permeable panel extending downward from the first air permeable panel for covering vertical side panels of the air conditioner unit; and

an adjustable fastener provided in a bottom portion of the second air permeable panel for securing the cover to a base of the air conditioner unit.

2. The cover of claim **1**, wherein the first air permeable panel is made of a first material and the second air permeable panel is made of a second material that is different from the first material.

3. The cover of claim **2**, wherein the first material, the second material, or both are made of a stretchable fabric.

4. The cover of claim **2**, wherein the first material and the second material are selected from the group consisting of power mesh, cabaret stretch mesh, and honeycomb mesh.

5. The cover of claim **1**, wherein the first air permeable panel can maintain an air flow of about 1300 ft^3 min^{-1}.

6. The cover of claim **1**, wherein an average pore size of the first air permeable panel is greater than an average pore size of the second air permeable panel.

7. The cover of claim **1**, wherein an average pore size of the first air permeable panel is about 1 cm.

8. The cover of claim **1**, wherein an average pore size of the second air permeable panel is about 1 mm.

9. The cover of claim **1**, wherein the second air permeable panel includes two or more sections connected by one or more seams

10. The cover of claim **1**, wherein the first air permeable panel includes an opening therein at least as large as an exhaust opening in the air conditioning unit.

11. The cover of claim **1**, wherein the first air permeable panel is made of a substantially non stretch material and includes an opening therein at least as large as an exhaust opening in the air conditioning unit.

12. The cover of claim **1**, wherein the adjustable fastener is elastic or a drawstring.

13. A cover for an air conditioner unit, comprising:

a first air permeable panel for covering a horizontal top panel of an air conditioner unit, wherein the first air permeable panel includes a first material;

a second air permeable panel extending downward from the first air permeable panel for covering vertical side panels of the air conditioner unit, wherein the second air permeable panel includes a first section with the first material and a second section with a second material that is different from the first material; and

an adjustable fastener provided in a bottom portion of the second air permeable panel for securing the cover to a base of the air conditioner unit.

14. The cover of claim **13**, wherein the first material, second material, or both are made of a stretchable fabric.

15. The cover of claim **14**, wherein the first material and the second material are selected from the group consisting of power mesh, cabaret stretch mesh, and honeycomb mesh.

16. The cover of claim **13**, wherein the second material can maintain an air flow of about 1300 ft^3 min^{-1}.

17. The cover of claim **13**, wherein an average pore size of the second material is greater than an average pore size of the first material.

18. The cover of claim **13**, wherein an average pore size of the first material is about 1 mm.

19. The cover of claim **13**, wherein an average pore size of the second material is about 1 cm.

20. The cover of claim **13**, wherein the adjustable fastener is elastic or a drawstring.

* * * * *