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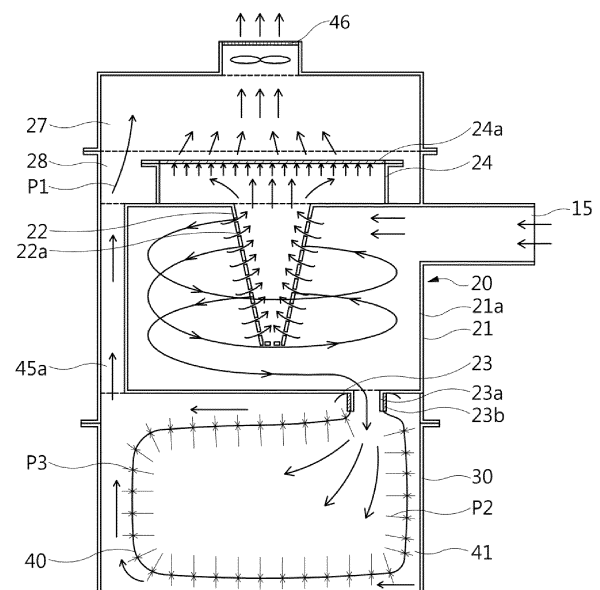
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(54) **TRASH AND GARBAGE COLLECTING APPARATUS BY USING BAG**

(57) The present disclosure comprises: a separating device in which trash, garbage and air flow through a suction port and which accommodates trash and garbage therein; a vacuum suction device which is provided at the outlet side of the separating device and generates a suction force so that trash, garbage, and air can be sucked through the suction port; a passage portion of which one side and the other side are respectively in communication with the separating device and the vacuum suction device, so as to connect the separating device and the vacuum suction device to each other; a collection container provided on the lower portion of the separating device; a collection bag which is provided in the collection container and accommodates trash; a bag fixing means provided at the lower side of the separating device to fix the upper end of the collection bag; and a suction passage of which the lower end and the upper end are respectively in communication with the inner upper portion of the collection container and the inner lower portion of the passage portion, so as to suck in the air included in a flow space between the collection bag and the collection container.

FIG. 3



Description

Technical Field

[0001] The present disclosure relates to a collecting apparatus and, more specifically, to a trash and garbage collecting apparatus using a bag, the apparatus being configured to discard the bag, trash, and garbage into a trash bin at the same time, and to keep a collection container, the trash bin, and an area around the trash bin clean.

Background Art

[0002] In general, a vacuum cleaner is a cleaning device designed to suck up dust and the like by using air pressure differences. Specifically, a vacuum cleaner cleans by sucking dust from carpeted living room floors using a difference in air pressure.

[0003] FIG. 32 is a concept view illustrating an existing trash collecting apparatus. Referring to FIG. 32, the existing trash collecting apparatus includes a suction port, a vacuum suction device, a separating device, a collection container, a bag-supporting container, and a collection bag.

[0004] First, the vacuum suction device sucks air to change the inside space of the trash collecting apparatus into a vacuum state. Then, dust, debris, garbage dirt, and air are sucked through the suction port by a pressure difference.

[0005] Therefore, the separating device filters trash such as dust, debris, garbage dirt, and the like sucked by a pressure difference. In addition, trash such as dust, debris, garbage, and the like are collected in the collection bag provided in the bag-supporting container. In addition, air is discharged outward through the vacuum suction device.

[0006] However, an upper portion of the collection bag and an upper portion of the bag-supporting container of the existing trash collecting apparatus are open. Therefore, when the vacuum cleaner is operated, a lot of dust, debris, and garbage get stuck on a lower surface of the separating plate 23 provided at a lower portion of the separating device.

[0007] Accordingly, there is a problem of contaminating the lower surface of the separating plate due to remaining dust, debris, and garbage. Therefore, a user should separate the separating device from the vacuum cleaner, and then wipe the lower surface of the separating plate to remove a lot of dust, debris, and garbage, and clean the separating plate periodically.

[0008] Furthermore, the existing trash collecting apparatus includes a suction tube provided outside the separating device, and one portion of the suction tube is connected to an outer portion of the collection container, so that when the collection container is attached and detached, there is a great risk of damage or destruction to the suction tube.

[0009] Furthermore, for the existing trash collecting apparatus, the suction tube is bent twice, and the diameter of the suction tube is formed small, resulting in a problem that air is not properly sucked from the flow space between the collection container and the collection bag to the passage portion.

Disclosure Technical Problem

[0010] The present disclosure has been made keeping in mind the above problems occurring in the related art, and an objective of the present disclosure is to provide a trash and garbage collecting apparatus using a bag, and the apparatus includes a bag fixing means to efficiently mount and separate an upper end of a collection bag to and from a part of a separating container in a separating device, and a suction passage provided at a part of the separating device and communicating with a collection container and a passage portion, so that the apparatus is capable of efficiently attaching and detaching the collection container to and from the separating device, and there is no longer a need for a bag supporting container for supporting the collection bag in the collection container.

[0011] Another objective of the present disclosure is to provide a trash and garbage collecting apparatus using a bag, the apparatus being configured to gather and fit, at a portion of a separating plate, an upper portion of a collection bag collecting trash and garbage therein between a nozzle through which trash and garbage are transferred and a nozzle cap securely fitted over the nozzle, so that there is no risk of dust, debris, and garbage stuck on a lower surface of the separating plate.

[0012] Yet another objective of the present disclosure is to provide a trash and garbage collecting apparatus using a bag, the apparatus including a suction passage provided at a portion of a separating device and formed long in a direction of gravity, and a collection container attached and detached separately from the suction passage, so that there is no risk of damage or destruction to the suction passage, and air is efficiently sucked from a flow space between the collection container and a collection bag to a passage portion.

[0013] Still another objective of the present disclosure is to provide a trash and garbage collecting apparatus using a bag, the apparatus being configured to discard the bag and trash into a trash bin at the same time, so that the collection container, the trash bin, and the area around the trash bin can always be kept clean.

Technical Solution

[0014] In order to achieve the above objectives, according to one aspect of the present disclosure, there is provided trash and garbage collecting apparatus using a bag, the trash and garbage collecting apparatus using a separating device in which trash, garbage, and air flow through a suction port and comprising a separating con-

tainer accommodates trash and garbage therein and a vacuum suction device provided at an outlet side of the separating device and generating a suction force so that trash, garbage, and air are sucked through the suction port and the separating container (21a), the apparatus comprising: a passage portion of which a first portion and a second portion communicate respectively with the separating device and the vacuum suction device to connect the separating device and the vacuum suction device to each other; a collection container provided at a lower portion of the separating device; a collection bag provided in the collection container and accommodating trash therein; a bag fixing means provided at one side of the separating container and fixing an upper end of the collection bag; and a suction passage of which a lower end and an upper end communicate respectively with an inner upper portion of the collection container and an inner lower portion of the passage portion to suck air included in a flow space between the collection bag and the collection container, wherein the flow space may be provided between the collection bag and the collection container, and be a space for air to flow therein.

[0015] The separating device may include: a body part; a separating container provided in the body part and accommodating garbage and air from the suction port; and a separating plate provided at a lower portion of the separating container and separating the separating container from the collection container, wherein the bag fixing means may include: a nozzle provided at one portion of a lower surface of the separating plate, communicating with the separating container and the collection container, and allowing trash and garbage passing through the separating container to be transferred; and a nozzle cap fitted over and coupled to an outer circumferential surface of the nozzle, and provided to gather and attach an upper portion of the collection bag, wherein the upper portion of the collection bag may be securely fitted between an outer circumferential surface of the nozzle and an inner circumferential surface of the nozzle cap, and the separating device may be coupled to the collection container while a central portion and a lower portion of the collection bag are disposed in the collection container.

[0016] The separating device may include: a conical basket provided at an inner upper portion of a separating container and provided for air sucked from the separating container to flow, wherein the conical basket may have a conical form of which a diameter is reduced in a direction from an upper portion to a lower portion, and have a plurality of through holes formed through an outer circumferential surface to allow air sucked by the vacuum suction device to pass therethrough.

[0017] The separating device may include: a first cylindrical basket which may communicate with the passage portion and a separating container, have a cylindrical shape with an open upper portion, and allow air sucked from the separating container to flow, wherein the first cylindrical basket may have a plurality of through

holes which may be formed through an outer circumferential surface thereof and allow air sucked by the vacuum suction device to pass.

[0018] The separating device may include: an outlet provided in the passage portion communicating with the vacuum suction device, and allows air flowing into the separating device to pass; and a suction filter provided at an upper portion of the outlet and filtering fine dust included in the air passing through the outlet.

[0019] The separating device may include: a second cylindrical basket which communicates with the passage portion and a separating container, has a cylindrical shape with open upper and lower portions, and allows air sucked from the separating container to flow.

[0020] A pressure drop may occur in air passing through the separating device, and a suction pressure may be formed lower than an internal pressure by a pressure drop value, the suction passage may have an upper end and a lower end respectively communicating with the collection container and the passage portion, and a spatial pressure may be formed equal to the suction pressure, the spatial pressure may be formed lower than the internal pressure by the pressure drop value, and the collection bag may have a shape inflated toward an inner circumferential surface of the collection container by air having the internal pressure (However, P1: pressure of air included in the passage portion, P2: pressure of air in the collection bag, P3: pressure of air in the flow space between the collection bag and the collection container).

[0021] The separating device may include a body part, and a separating container provided in the body part and accommodating trash, garbage, and air from the suction port, wherein the separating container may include a spiral guide vein on an inner circumferential surface thereof to allow the trash passing through the suction port to be transferred toward the collection container.

[0022] The separating device may include a body part, and a separating container provided in the body part and accommodating trash, garbage, and air from the suction port, wherein the separating container may include an inclined part formed on an inner circumferential surface thereof and allowing the trash accommodated in the separating container to be transferred toward a nozzle.

[0023] The separating device may include a body part, and a separating part provided in the body part, wherein the bag fixing means is a nozzle ring coupled to a lower portion of an outer circumferential surface of the separating part so as to gather and attach an upper portion of the collection bag.

[0024] The separating device may include: a body part, and a separating part provided in the body part; and a conical basket provided at an inner upper portion of the separating part and allowing air sucked from the separating part to flow, wherein the conical basket may have a conical form of which a diameter is reduced in a direction from an upper portion to a lower portion, and has a plurality of through holes formed through an outer circumferential surface to allow air sucked by the vacuum

suction device to pass therethrough.

[0025] The separating device may include a body part, and a separating part provided in the body part; and a first cylindrical basket which communicates with the passage portion and the separating part, has a cylindrical shape with an open upper portion, and allows air sucked from the separating part to flow, wherein the first cylindrical basket may have a plurality of through holes which may be formed through an outer circumferential surface thereof and allow air sucked by the vacuum suction device to pass.

[0026] The separating device may include: a body part, and a separating part provided in the body part; and a second cylindrical basket which may communicate with the passage portion and the separating part, have a cylindrical shape with open upper and lower portions, and allow air sucked from the separating part to flow.

[0027] The separating device may include a body part, and a separating part provided in the body part and accommodating trash, garbage, and air from the suction port, wherein the separating part may include a spiral guide vein on an inner circumferential surface thereof to allow the trash passing through the suction port to be transferred to the collection container.

Advantageous Effects

[0028] According to the present disclosure, the trash and garbage collecting apparatus using a bag includes the nozzle and the nozzle cap that allow the collection bag to be attached in a one-touch manner, and the suction passage at a part of the inside space of the separating device which communicates with the collection container and the passage portion. Therefore, it is easy to attach and detach the collection container to and from the separating device, and there is no longer a need for a bag-supporting container to support the connection bag in the collection container.

[0029] Furthermore, the apparatus of the present disclosure is configured to gather and fit over the upper portion of the collection bag, at a portion of the separating plate, which can collect trash and garbage in a one-touch manner between the nozzle through which trash and garbage are transferred and the nozzle cap securely fitted over the outer part of the nozzle, so that dust and debris do not stick to the lower surface of the separating plate, and the lower surface of the separating plate can always be kept clean.

[0030] Furthermore, when the collection bag is detached, the apparatus of the present disclosure can prevent trash particles from leaking out of the collection bag in advance, so that the collection bag can be easily removed.

[0031] Moreover, according to the apparatus of the present disclosure, the trash and garbage collecting apparatus using a bag includes the suction passage which is formed long in the space between the outer part of the separating container and the inner part of the body

part in a direction of gravity and has an inner diameter formed greater than an existing diameter. Therefore, there is no risk of damage or destruction of the suction passage, and air can be efficiently sucked from the flow space between the collection container and the collection bag to the passage portion.

[0032] Furthermore, according to the present disclosure, the trash and garbage collecting apparatus using a bag is configured to discard the bag and trash into a trash bin, and the collection container, and to always keep the trash bin and the area around the trash bin clean.

Description of Drawings

[0033]

FIG. 1 is a concept view illustrating a trash and garbage collecting apparatus using a bag according to the present disclosure.

FIG. 2 is a front-sectional view illustrating the trash and garbage collecting apparatus including a conical basket, through holes, and a suction passage formed in a separating device.

FIG. 3 is a front-sectional view illustrating the trash and garbage collecting apparatus including the conical basket, the through holes, an outlet, a suction filter, and the suction passage provided in the separating device.

FIG. 4 is a front-sectional view illustrating the trash and garbage collecting apparatus including the conical basket, the through holes, and the suction passage formed outside the separating device.

FIG. 5 is a front-sectional view illustrating the trash and garbage collecting apparatus including the conical basket, the through holes, the outlet, the suction filter, and the suction passage provided outside the separating device.

FIG. 6 is a front-sectional view illustrating the trash and garbage collecting apparatus including a first cylindrical basket, the through holes, and the suction passage formed in the separating device.

FIG. 7 is a front-sectional view illustrating the trash and garbage collecting apparatus including the first cylindrical basket, the through holes, the outlet, the suction filter, and the suction passage provided in the separating device.

FIG. 8 is a front-sectional view illustrating the trash and garbage collecting apparatus including the first cylindrical basket, the through holes, and the suction passage formed outside the separating device.

FIG. 9 is a front-sectional view illustrating the trash and garbage collecting apparatus including the first cylindrical basket, the through holes, the outlet, the suction filter, and the suction passage provided outside the separating device.

FIG. 10 is a front-sectional view illustrating the trash and garbage collecting apparatus including the conical basket, the through holes, a conical separating

plate, and the suction passage formed in the separating device.

FIG. 11 is a front-sectional view illustrating the trash and garbage collecting apparatus including the conical basket, the through holes, the outlet, the suction filter, the conical separating plate, and the suction passage provided in the separating device.

FIG. 12 is a front-sectional view illustrating the trash and garbage collecting apparatus including the conical basket, the through holes, the conical separating plate, and the suction passage formed outside the separating device.

FIG. 13 is a front-sectional view illustrating the trash and garbage collecting apparatus including the conical basket, the through holes, the outlet, the suction filter, the conical separating plate, and the suction passage provided outside the separating device.

FIG. 14 is a front-sectional view illustrating the trash and garbage collecting apparatus including a second cylindrical basket, the conical separating plate, and the suction passage formed in the separating device.

FIG. 15 is a front-sectional view illustrating the trash and garbage collecting apparatus including the second cylindrical basket, the outlet, the suction filter, the conical separating plate, and the suction passage provided in the separating device.

FIG. 16 is a front-sectional view illustrating the trash and garbage collecting apparatus including the second cylindrical basket, the conical separating plate, and the suction passage formed outside the separating device.

FIG. 17 is a front-sectional view illustrating the trash and garbage collecting apparatus including the second cylindrical basket, the outlet, the suction filter, the conical separating plate, and the suction passage formed outside the separating device.

FIG. 18 is a front-sectional view illustrating the trash and garbage collecting apparatus including the first cylindrical basket, the through holes, the conical separating plate, and the suction passage formed in the separating device.

FIG. 19 is a front-sectional view illustrating the trash and garbage collecting apparatus including the first cylindrical basket, the through holes, the outlet, the suction filter, the conical separating plate, and the suction passage provided in the separating device.

FIG. 20 is a front-sectional view illustrating the trash and garbage collecting apparatus including the first cylindrical basket, the through holes, the conical separating plate, and the suction passage formed outside the separating device.

FIG. 21 is a front-sectional view illustrating the trash and garbage collecting apparatus including the first cylindrical basket, the through holes, the outlet, the suction filter, the conical separating plate, and the suction passage provided outside the separating device.

FIG. 22 is a perspective view illustrating a separating container with a spiral guide vein.

FIG. 23 is a perspective view illustrating the separating container with an inclined part formed at an upper portion of a nozzle.

FIG. 24 is a front-sectional view illustrating the trash and garbage collecting apparatus with the separating part, the conical basket, the through holes, and the suction passage provided in the separating device, without the separating plate.

FIG. 25 is a front-sectional view illustrating the trash and garbage collecting apparatus with the separating part, the conical basket, the through holes, the outlet, the suction filter, and the suction passage provided in the separating device, without the separating plate.

FIG. 26 is a front-sectional view illustrating the trash and garbage collecting apparatus with the separating part, the second cylindrical basket, and the suction passage provided in the separating device, without the separating plate.

FIG. 27 is a front-sectional view illustrating the trash and garbage collecting apparatus with the separating part, the second cylindrical basket, the outlet, the suction filter, and the suction passage provided in the separating device, without the separating plate.

FIG. 28 is a front-sectional view illustrating the trash and garbage collecting apparatus with the separating part, the first cylindrical basket, the through holes, and the suction passage provided in the separating device, without the separating plate.

FIG. 29 is a front-sectional view illustrating the trash and garbage collecting apparatus with the separating part, the first cylindrical basket, the through holes, the outlet, the suction filter, and the suction passage provided in the separating device, without the separating plate.

FIG. 30 is a front-sectional view illustrating the trash and garbage collecting apparatus with the first cylindrical basket, the through holes, the outlet provided in a vacuum suction device, the suction filter, the suction passage provided in the separating device, and the conical separating plate.

FIG. 31 is a front-sectional view illustrating the trash and garbage collecting apparatus with the separating plate, a hemispherical collection container, and an arch passage portion.

FIG. 32 is a front-sectional view illustrating an existing trash collecting apparatus.

Mode for Invention

[0034] Hereinafter, exemplary embodiments of the present disclosure will be described in detail with reference to accompanying drawings such that the technical idea of the present disclosure can be easily embodied by one of ordinary skill in the art to which this present disclosure belongs.

[0035] However, the following embodiments are merely examples to help understand the present disclosure, and the scope of the rights of the present disclosure is not reduced or limited thereto. Furthermore, the present disclosure may be implemented in many different forms and is not limited to the embodiments described herein.

[0036] First, according to the present disclosure, a trash and garbage collecting apparatus 10 using a bag will be described.

[0037] FIG. 1 is a concept view illustrating a trash and garbage collecting apparatus 10 using a bag according to the present disclosure.

[0038] Referring to FIG. 1, according to the present disclosure, the trash and garbage collecting apparatus 10 using a bag includes a suction port 15, a separating device 20, a vacuum suction device 27, a passage portion 28, a collection container 30, a collection bag 40, and a suction passage 45a.

[0039] First, the suction port 15 is a passage through which trash, garbage, and air are sucked. At this point, the suction port 15 is formed in a circular pipe shape that is transversely long.

[0040] Furthermore, the separating device 20 communicates with the suction port 15 and serves to separate trash, garbage, and air introduced through the suction port 15 from each other. Specifically, the separating device 20 communicates with the suction port 15, and trash and garbage are separated from air inside the separating device 20.

[0041] At this point, the separating device 20 is formed in a hollow cylinder or elliptical cylinder.

[0042] Furthermore, the vacuum suction device 27 is provided at an outlet side of the separating device 20 and sucks trash, garbage, and air through the suction port 15 and the separating device 20 in communication with the suction port 15. At this point, the vacuum suction device 27 is installed at an upper portion of the separating device 20.

[0043] A first portion and a second portion of the passage portion 28 communicate respectively with the separating device 20 and the vacuum suction device 27, so that the passage portion 28 connects the separating device 20 and the vacuum suction device 27 to each other.

[0044] The collection container 30 is provided at a lower portion of the separating device 20. At this point, the collection container 30 is empty and has a shape of which a part of an upper portion is open.

[0045] Air sucked through the suction port 15 passes through the separating device 20 and then is discharged outward by the vacuum suction device 27. Furthermore, trash and garbage sucked through the suction port 15 pass through the separating device 20 and then are accommodated in the collection container 30 by a centrifugal force.

[0046] Furthermore, the collection bag 40 is provided in the collection container 30, and trash introduced

through the separating device 20 is accommodated in the collection bag 40. At this point, the collection bag 40 may be made of vinyl, paper, or other materials.

[0047] Furthermore, a space between the collection bag 40 and the collection container 30 is a flow space 41 through which air flows.

[0048] Referring to FIG. 1, the separating device 20 includes a body part 21 and a separating container 21a.

[0049] First, the body part 21 provides an external shape of the separating device 20.

[0050] Furthermore, the separating container 21a is provided in the body part 21 and accommodates trash, garbage, and air sucked from the suction port 15. At this point, the separating container 21a has an empty inside part, and a cross section of the separating container 21a is formed in a circle or an ellipse.

[0051] Meanwhile, the suction passage 45a is provided in a space between an inside part of the body part 21 and an outside part of the separating container 21a. A lower end and an upper end of the suction passage 45a communicate respectively with an inner upper portion of the collection container 30 and an inner lower portion of the passage portion 28. Therefore, the suction passage 45a is a passage through which air included in the flow space 41 between the collection bag 40 and the collection container 30 is sucked.

[0052] In other words, air included in the flow space 41 between the collection bag 40 and the collection container 30 passes through the suction passage 45a and the passage portion 28 and then flows to the vacuum suction device 27.

[0053] Furthermore, the lower end of the suction passage 45a communicates with the inner upper portion of the collection container 30 and serves as a passage through which air introduced from the flow space 41 flows.

[0054] Furthermore, the upper end of the suction passage 45a communicates with the inner lower portion of the passage portion 28 and serves as a passage through which air introduced from the flow space 41 is discharged.

[0055] The air introduced from the flow space 41 passes through the suction passage 45a and the passage portion 28 and then is discharged to the vacuum suction device 27.

[0056] Meanwhile, the separating device 20 includes a bag fixing means and a separating plate 23.

[0057] Furthermore, the separating plate 23 is provided at a lower portion of the separating container 21a and separates the separating container 21a from the collection container 30. At this point, the separating plate 23 is horizontally flat in a circular plate shape or an elliptic plate shape of a predetermined thickness.

[0058] The bag fixing means is provided at the separating container 21a to fix an upper end of the bag and may include a nozzle 23a and a nozzle cap 23b.

[0059] The nozzle 23a is formed at one portion of a lower surface of the separating plate 23, communicates

with the separating container 21a and the collection container 30, and serves as a passage through which trash and garbage passing through the separating container 21a are transferred. At this point, the nozzle 23a is provided at an upper portion of an inside part of the collection container 30 and has a circular pipe shape with open upper and lower portions, the shape being formed in the direction of gravity.

[0060] Trash and garbage sucked through the suction port 15 pass through the separating container 21a and the nozzle 23a of the separating plate 23 and then are accommodated in the collection bag 40.

[0061] Furthermore, the nozzle cap 23b is fitted over and coupled to an outer circumferential surface of the nozzle 23a to gather an upper portion of the collection bag 40 and attach it in a one-touch manner. At this point, the nozzle cap 23b has a circular pipe shape formed in a direction of gravity. An inner diameter of the nozzle cap 23b is formed in a size corresponding to an outer diameter of the nozzle 23a so that the nozzle cap 23b and the nozzle 23a may be fastened to each other.

[0062] Specifically, the upper portion of the collection bag 40 is securely fitted between the outer circumferential surface of the nozzle 23a and an inner circumferential surface of the nozzle cap 23b in a one-touch manner.

[0063] Thereafter, the separating device 20 is coupled to the collection container 30 while a central portion and a lower portion of the collection bag 40 are disposed inside the collection container 30.

[0064] According to the present disclosure, the trash and garbage collecting apparatus 10 using a bag includes the nozzle 23a and the nozzle cap 23b to which the collection bag 40 are attached in a one-touch manner, and the suction passage 45a provided in a part of the inside space of the separating device 20 and communicating with the collection container 30 and the passage portion 28. Therefore, attachment and detachment of the collection container 30 to and from the separating device 20 are easily performed. Moreover, there is no longer a need for a bag-supporting container 35 in the collection container 30 to support the collection bag 40.

[0065] Furthermore, according to the present disclosure, the trash and garbage collecting apparatus 10 using a bag is configured to gather and fit over the upper portion of the collection bag 40 which is capable of collecting trash and garbage in a one-touch manner between the nozzle 23a through which trash and garbage are transferred at one side of the separating plate 23 and the nozzle cap 23b securely fitted over an outer portion of the nozzle 23a. Therefore, dust and residue do not stick to the separating plate 23, and a lower surface of the separating plate 23 can be kept clean, which is an advantage.

[0066] In addition, according to the present disclosure, for the trash and garbage collecting apparatus 10 using a bag, when the collection bag 40 is detached, it is possible to prevent trash particles from leaking out of the collection bag 40 in advance, and it is easy to prepare the collection

bag 40, which is an advantage.

[0067] Meanwhile, a second portion of the vacuum suction device 27 includes an outlet filter 46 filtering fine dust included in air passing through the vacuum suction device 27.

[0068] Furthermore, in the separating device 20, air sucked by the vacuum suction device 27 directly flows to the vacuum suction device 27, and trash is separated from the air by a centrifugal force.

[0069] FIG. 2 is a front-sectional view illustrating the trash and garbage collecting apparatus including a conical basket 22, through holes 22a, and a suction passage 45a formed in a separating device 20.

[0070] Referring to FIG. 2, the separating device 20 may include the conical basket 22.

[0071] First, the conical basket 22 is provided on an inner upper portion of the separating container 21a and serves as a passage through which air sucked from the separating container 21a flows. At this point, the conical basket 22 has an empty inside space and has a conical shape of which a diameter is reduced in a direction from the upper portion to a lower portion.

[0072] Furthermore, the outer circumferential surface of the conical basket 22 has a plurality of through holes 22a through which air sucked by the vacuum suction device 27 passes.

[0073] Air sucked through the suction port 15 passes through the separating container 21a, the plurality of through holes 22a of the conical basket 22, and the passage portion 28 and then is discharged to the vacuum suction device 27.

[0074] FIG. 3 is a front-sectional view illustrating the trash and garbage collecting apparatus including the conical basket, the through holes, an outlet, a suction filter, and the suction passage provided in the separating device.

[0075] Referring to FIG. 3, the separating device 20 may include the outlet 24 and the suction filter 24a.

[0076] First, the outlet 24 is provided in the passage portion 28, communicates with the upper portion of the conical basket 22 of the separating device 20, and serves as a passage through which air flowing into the conical basket 22 of the separating device 20 passes. At this point, the outlet 24 has a cylindrical shape of which an upper portion and a central portion of a lower portion are open.

[0077] Furthermore, the suction filter 24a is provided at the upper portion of the outlet 24 and filters fine dust included in air passing through the outlet 24. At this point, the suction filter 24a may be formed in various shapes.

[0078] FIG. 4 is a front-sectional view illustrating the trash and garbage collecting apparatus including the conical basket 22, the through holes 22a, and the suction passage 45a formed outside the separating device 20.

[0079] Referring to FIG. 4, the separating device 20 may include the body part 21 and the separating container 21a formed integrally with each other.

[0080] A lower end of the suction passage 45a com-

municates with an inner upper portion of the collection container 30, and an upper end of the suction passage 45a communicates with an inner lower portion of the passage part 20.

[0081] FIG. 5 is a front-sectional view illustrating the trash and garbage collecting apparatus including the conical basket 22, the through holes 22a, the outlet 24, the suction filter 24a, and the suction passage 45a provided outside the separating device 20.

[0082] The trash and garbage collecting apparatus 10 illustrated in FIG. 4 may include the outlet 24 and the suction filter 24a as illustrated in FIG. 5.

[0083] FIG. 6 is a front-sectional view illustrating the trash and garbage collecting apparatus including a first cylindrical basket 25a, the through holes 22a, and the suction passage 45a formed in the separating device 20.

[0084] Referring to FIG. 6, the separating device 20 may include the first cylindrical basket 25a.

[0085] First, the first cylindrical basket 25a communicates with the outlet 24 and the separating container 21a and serves as a passage through which air sucked from the separating container 21a flows.

[0086] At this point, the first cylindrical basket 25a has a cylindrical shape of which an upper portion is open and the inside space is empty.

[0087] Air sucked through the suction port 15 passes through the separating container 21a, the first cylindrical basket 25a, and the outlet 24 and then is discharged to the vacuum suction device 27.

[0088] Furthermore, the outer circumferential surface of the first cylindrical basket 25a has a plurality of through holes 22a through which air sucked by the vacuum suction device 27 passes.

[0089] FIG. 7 is a front-sectional view illustrating the trash and garbage collecting apparatus including the first cylindrical basket 25a, the through holes 22a, the outlet 24, the suction filter 24a, and the suction passage 45a provided in the separating device 20.

[0090] Referring to FIG. 7, like the trash and garbage collecting apparatus 10 illustrated in FIG. 5, the trash and garbage collecting apparatus 10 illustrated in FIG. 6 may also have the outlet 24 and the suction filter 24a.

[0091] FIG. 8 is a front-sectional view illustrating the trash and garbage collecting apparatus including the first cylindrical basket 25a, the through holes 22a, and the suction passage 45a formed outside the separating device 20.

[0092] Referring to FIG. 8, the trash and garbage collecting apparatus 10 illustrated in FIG. 6 may include the suction passage 45a provided outside the separating device 20.

[0093] FIG. 9 is a front-sectional view illustrating the trash and garbage collecting apparatus including the first cylindrical basket 25a, the through holes 22a, the outlet 24, the suction filter 24a, and the suction passage 45a provided outside the separating device 20.

[0094] Referring to FIG. 9, like the trash and garbage collecting apparatus 10 illustrated in FIG. 5, the trash and

garbage collecting apparatus 10 illustrated in FIG. 8 may also have the outlet 24 and the suction filter 24a.

[0095] FIG. 10 is a front-sectional view illustrating the trash and garbage collecting apparatus including the conical basket 22, the through holes 22a, a conical separating plate 26, and the suction passage 45a formed in the separating device 20.

[0096] Referring to FIG. 10, the conical separating plate 26 is provided at a lower portion of the separating container 21a, and has a conical shape of which the diameter is reduced in a direction from the upper portion to a lower portion, and separates the separating container 21a from the collection container 30.

[0097] Likewise, a central portion of a lower portion of the conical separating plate 26 may include the nozzle 23a, and the nozzle 23a communicates with the separating container 21a and the collection container 30, and through which trash and garbage passing through the separating container 21a are transferred.

[0098] Furthermore, the nozzle cap 23b may be securely fitted over an outer circumferential surface of the nozzle 23a to gather and attach the upper portion of the collection bag 40 in a one-touch manner.

[0099] FIG. 11 is a front-sectional view illustrating the trash and garbage collecting apparatus including the conical basket 22, the through holes 22a, the outlet 24, the suction filter 24a, the conical separating plate 26, and the suction passage 45a provided in the separating device 20.

[0100] Referring to FIG. 11, the trash and garbage collecting apparatus 10 illustrated in FIG. 10 may include the outlet 24 and the suction filter 24a.

[0101] FIG. 12 is a front-sectional view illustrating the trash and garbage collecting apparatus including the conical basket 22, the through holes 22a, the conical separating plate 26, and the suction passage 45a formed outside the separating device 20.

[0102] Referring to FIG. 12, the trash and garbage collecting apparatus 10 illustrated in FIG. 10 may include the suction passage 45a provided outside the separating device 20.

[0103] FIG. 13 is a front-sectional view illustrating the trash and garbage collecting apparatus including the conical basket 22, the through holes 22a, the outlet 24, the suction filter 24a, the conical separating plate 26, and the suction passage 45a provided outside the separating device 20.

[0104] Referring to FIG. 13, the trash and garbage collecting apparatus 10 illustrated in FIG. 12 may include the outlet 24 and the suction filter 24a.

[0105] FIG. 14 is a front-sectional view illustrating the trash and garbage collecting apparatus including a second cylindrical basket 25b, the conical separating plate 26, and the suction passage 45a formed in the separating device 20.

[0106] Referring to FIG. 14, the trash and garbage collecting apparatus 10 illustrated in FIG. 10 may include the second cylindrical basket 25b instead of the conical

basket 25.

[0107] At this point, the second cylindrical basket 25B has a cylindrical shape of which the upper and lower surfaces are open and the inside space is empty.

[0108] FIG. 15 is a front-sectional view illustrating the trash and garbage collecting apparatus including the second cylindrical basket 25b, the outlet 24, the suction filter 24a, the conical separating plate 26, and the suction passage 45a provided in the separating device 20.

[0109] Referring to FIG. 15, the trash and garbage collecting apparatus 10 illustrated in FIG. 14 may include the outlet 24 and the suction filter 24a.

[0110] FIG. 16 is a front-sectional view illustrating the trash and garbage collecting apparatus including the second cylindrical basket 25b, the conical separating plate 26, and the suction passage 45a formed outside the separating device 20.

[0111] Referring to FIG. 16, the trash and garbage collecting apparatus 10 illustrated in FIG. 14 may include the suction passage 45a provided outside the separating device 20.

[0112] FIG. 17 is a front-sectional view illustrating the trash and garbage collecting apparatus including the second cylindrical basket 25b, the outlet 24, the suction filter 24a, the conical separating plate 26, and the suction passage 45a formed outside the separating device 20.

[0113] Referring to FIG. 17, the trash and garbage collecting apparatus 10 illustrated in FIG. 16 may include the outlet 24 and the suction filter 24a.

[0114] FIG. 18 is a front-sectional view illustrating the trash and garbage collecting apparatus including the first cylindrical basket 25a, the through holes 22a, the conical separating plate 26, and the suction passage 45a formed in the separating device 20.

[0115] Referring to FIG. 18, a plurality of through holes 22a may be formed through the outer circumferential surface of the first cylindrical basket 25a.

[0116] FIG. 19 is a front-sectional view illustrating the trash and garbage collecting apparatus including the first cylindrical basket 25a, the through holes 22a, the outlet 24, the suction filter 24a, the conical separating plate 26, and the suction passage 45a provided in the separating device 20.

[0117] Referring to FIG. 19, the trash and garbage collecting apparatus 10 illustrated in FIG. 18 may include the outlet 24 and the suction filter 24a.

[0118] FIG. 20 is a front-sectional view illustrating the trash and garbage collecting apparatus including the first cylindrical basket 25a, the through holes 22a, the conical separating plate 26, and the suction passage 45a formed outside the separating device 20.

[0119] Referring to FIG. 20, the trash and garbage collecting apparatus 10 illustrated in FIG. 18 may include the suction passage 45a provided outside the separating device 20.

[0120] FIG. 21 is a front-sectional view illustrating the trash and garbage collecting apparatus including the first cylindrical basket 25a, the through holes 22a, the outlet

24, the suction filter 24a, the conical separating plate 26, and the suction passage 45a provided outside the separating device 20.

[0121] Referring to FIG. 21, the trash and garbage collecting apparatus 10 illustrated in FIG. 20 may include the outlet 24 and the suction filter 24a.

[0122] FIG. 22 is a perspective view illustrating a separating container 21a with a spiral guide vein 21b. FIG. 23 is a perspective view illustrating the separating container 21a with an inclined part 23c formed at an upper portion of the nozzle 23a.

[0123] Referring to FIG. 22, the spiral guide vein 21b may be formed on an inner circumferential surface of the separating container 21a so that trash passing through the suction port 15 is spirally transferred from the separating container 21a to the collection container 30.

[0124] Referring to FIG. 23, the inclined part 23c may be formed to be inclined at the inner circumferential surface of the separating container 21a so that trash spirally transferred in the separating container 21a may be transferred to be inclined toward the nozzle 23a.

[0125] FIG. 24 is a front-sectional view illustrating the trash and garbage collecting apparatus with the separating part 21c, the conical basket 22, the through holes 22a, and the suction passage 45a provided in the separating device 20, without the separating plate 23.

[0126] Referring to FIG. 24, the separating part 21c may be provided in the body part 21 such that the central shaft of the separating part 21c is formed coaxially with the central shaft of the body part 21 and the central shaft of the conical basket 22. At this point, the diameter of the separating part 21c is formed smaller than the diameter of the body part 21.

[0127] In this case, a space between the body part 21 and the separating part 21c may be formed wider than in other cases.

[0128] Furthermore, the trash and garbage collecting apparatus 10 illustrated in FIG. 24 may not include the separating plate 23 which is provided to separate the separating part 21c and the collection container 30 from each other so that trash and garbage are directly transferred from the separating part 21c to the collection container 30.

[0129] Referring to FIG. 24, a nozzle ring 23d may be used as another embodiment of the bag fixing means according to the present disclosure. The nozzle ring 23d may be coupled to a lower portion of the outer circumferential surface of the separating part 21c to gather and attach the upper portion of the collection bag 40 in a one-touch manner.

[0130] At this point, while the upper portion of the collection bag 40 is located between the outer circumferential surface of the separating part 21c and the inner circumferential surface of the nozzle ring 23d, the nozzle ring 23d may be securely fitted in a one-touch manner.

[0131] Furthermore, the nozzle ring 23d may be made of an elastic material and has a diameter smaller than the diameter of a lower end of the separating part 21c. After

the upper end of the collection bag 40 covers the lower end of the separating part 21c, the nozzle ring 23d may expand by elasticity thereof and be mounted.

[0132] FIG. 25 is a front-sectional view illustrating the trash and garbage collecting apparatus with the separating part 21c, the conical basket 22, the through holes 22a, the outlet 24, the suction filter 24a, and the suction passage 45a provided in the separating device 20, without the separating plate 23.

[0133] Referring to FIG. 25, the trash and garbage collecting apparatus 10 illustrated in FIG. 24 may include the outlet 24 and the suction filter 24a.

[0134] FIG. 26 is a front-sectional view illustrating the trash and garbage collecting apparatus with the separating part 21c, the second cylindrical basket 25b, and the suction passage 45a provided in the separating device 20, without the separating plate 23.

[0135] Referring to FIG. 26, the trash and garbage collecting apparatus 10 illustrated in FIG. 24 may include the second cylindrical basket 25b instead of the conical basket 25.

[0136] FIG. 27 is a front-sectional view illustrating the trash and garbage collecting apparatus with the separating part 21c, the second cylindrical basket 25b, the outlet 24, the suction filter 24a, and the suction passage 45a provided in the separating device 20, without the separating plate 23.

[0137] Referring to FIG. 27, the trash and garbage collecting apparatus 10 illustrated in FIG. 26 may include the outlet 24 and the suction filter 24a.

[0138] FIG. 28 is a front-sectional view illustrating the trash and garbage collecting apparatus with the separating part 21c, the first cylindrical basket 25a, the through holes 22a, and the suction passage 45a provided in the separating device 20, without the separating plate 23.

[0139] Referring to FIG. 28, the first cylindrical basket 25a communicates with the outlet 24 and the separating part 21c to be a passage through which air sucked from the separating part 21c flows.

[0140] At this point, the first cylindrical basket 25a has a cylindrical shape of which an upper portion is open and the inside space is empty. Furthermore, the central shape of the first cylindrical basket 25a may be formed coaxially with the central shaft of the separating part 21c.

[0141] Furthermore, the outer circumferential surface of the first cylindrical basket 25a may have a plurality of through holes 22a through which air sucked by the vacuum suction device 27 passes.

[0142] Furthermore, the separating part 21c may be provided in the body part 21 such that the central shaft of the separating part 22 is formed coaxially with the central shaft of the body part 21 and the central shaft of the first cylindrical basket 25a. At this point, the diameter of the separating part 21c is formed smaller than the diameter of the body part 21.

[0143] In this case, a space between the body part 21 and the separating part 21c may be formed wider than in other cases.

[0144] FIG. 29 is a front-sectional view illustrating the trash and garbage collecting apparatus with the first cylindrical basket 25a, the through holes 22a, the outlet 24, the suction filter 24a, and the suction passage 45a provided in the separating device 20, without the separating plate 23.

[0145] Referring to FIG. 29, the trash and garbage collecting apparatus 10 illustrated in FIG. 28 may include the outlet 24 and the suction filter 24a.

[0146] FIG. 30 is a front-sectional view illustrating the trash and garbage collecting apparatus with the first cylindrical basket 25a, the through holes 22a, the outlet 24 provided in a vacuum suction device 27, the suction filter 24a, the suction passage 45a provided in the separating device 20, and the conical separating plate 26.

[0147] Referring to FIG. 30, the outlet 24 and the suction filter 24a are provided in the vacuum suction device 27, not in the passage portion 28.

[0148] FIG. 31 is a front-sectional view illustrating the trash and garbage collecting apparatus with the separating plate 26, a hemispherical collection container 30, and an arch passage portion 28.

[0149] Referring to FIG. 31, the conical separating plate 26 may have a conical shape with the diameter being reduced in a direction from the upper portion to the lower portion thereof.

[0150] Furthermore, a lower portion of the collection container 30 may have a hemispherical shape to expand the space occupied by the collection bag 40.

[0151] At this point, the suction passage 45a may be formed in the space between the body part 21 and the separating container 21a.

[0152] Furthermore, an upper portion of the passage portion 28 may have an arch shape to expand a space where air passing through the outlet 24 and the suction filter 24a flows.

[0153] The vacuum suction device 27 and the passage portion 28 are connected to a passage having a circular pipe shape.

[0154] In other words, a first end of the vacuum suction device 27 may communicate with the passage portion 28, and a second end of the vacuum suction device 27 may communicate with the outlet filter 46.

[0155] Meanwhile, the pressure of air in the vacuum suction device 27 is defined by a suction pressure P1. The pressure of air in the collection bag 40 is defined by an internal pressure P2. The pressure of air in the flow space 41 between the collection container 30 and the collection bag 40 is defined by a spatial pressure P3.

[0156] Referring to FIG. 3, trash and garbage sucked by the vacuum suction device 27 pass through the suction port 15, the separating device 20, and the nozzle 23a, and then are accommodated in the collection bag 40 inserted in the collection container 30.

[0157] Furthermore, air sucked by the vacuum suction device 27 passes through the suction port 15, the separating device 20, the through holes 22a of the conical basket 22, the outlet 24, the suction filter 24a, and the

passage portion 28, and then is discharged outward through the vacuum suction device 27 and the outlet filter 46.

[0158] Therefore, at the conical basket 22, a pressure drop may occur in the air passing through the through holes 22a of the conical basket 22. In other words, the suction pressure P1 is formed lower than the internal pressure P2 by the pressure drop value ΔP .

[0159] Furthermore, the lower end and the upper end of the suction passage 45a communicate respectively with the collection container 30 and the passage portion 28 provided at the upper portion of the separating device 20. Therefore, the spatial pressure P3 is formed equal to the suction pressure P1.

[0160] Therefore, the spatial pressure P3 is formed lower than the internal pressure P2 by the pressure drop value ΔP .

[0161] Accordingly, the collection bag 40 may have a shape inflated toward the inner circumferential surface of the collection container 30 by air having the internal pressure P2. Therefore, the shape and size of the collection bag 40 are changed to be similar to the collection container 30.

[0162] According to the present disclosure, the trash and garbage collecting apparatus using a bag includes the bag fixing means which allows the collection bag to be attached in a one-touch manner, and the suction passage at a part of the inside space of the separating device which communicates with the collection container and the passage portion. Therefore, it is easy to attach and detach the collection container to and from the separating device, and there is no longer a need for a bag-supporting container to support the connection bag in the collection container.

[0163] Furthermore, according to the present disclosure, the trash and garbage collecting apparatus using a bag is configured to gather and insert the upper portion of the collection bag collecting trash and garbage in a one-touch manner by the bag fixing means. Therefore, dust and residue do not stick to the lower surface of the separating plate, and the lower surface of the separating plate can be kept clean, which is an advantage.

[0164] In addition, according to the present disclosure, for the trash and garbage collecting apparatus using a bag, when the collection bag is detached, it is possible to prevent trash particles from leaking out of the collection bag in advance, and it is easy to prepare the collection bag, which is an advantage.

[0165] Furthermore, according to the present disclosure, the trash and garbage collecting apparatus using a bag includes the suction passage which is formed long in the space between the outer part of the separating container and the inner part of the body part in a direction of gravity and has an inner diameter formed greater than an existing diameter. Therefore, there is no risk of damage or destruction of the suction passage, and moreover, air can be efficiently sucked from the flow space between the collection container and the collection bag to the passage

portion.

[0166] Furthermore, according to the present disclosure, the trash and garbage collecting apparatus using a bag is configured to discard the bag and trash into a trash bin, and the collection container, and to always keep the trash bin and the area around the trash bin clean.

[0167] As described above, the present disclosure has the technical idea of mainly providing the trash and garbage collecting apparatus 10 using a bag. The embodiments described above with reference to the accompanying drawings are only embodiments, and the real scope of the rights of the present disclosure is based on the scope of the patent claims, but also extends to various equivalent embodiments that may exist.

List of references

[0168]

10 trash and garbage collecting apparatus using a bag
15 suction port 20 separating device
21 body part 21a separating container
21b guide vein 21c separating part
22 conical basket 22a through holes
23 separating plate 23a nozzle
23b nozzle cap 23c inclined part
23d nozzle ring 24 outlet
24a suction filter 25a first cylindrical basket
25b second cylindrical basket 26 conical separating plate
27 vacuum suction device 28 passage portion
30 collection container 40 collection bag
41 flow space 45a suction passage
46 outlet filter P1 suction pressure
P2 internal pressure P3 spatial pressure
 ΔP pressure drop value

Claims

1. A trash and garbage collecting apparatus using a bag, comprising:

a separating device (20) in which trash, garbage, and air flow through a suction port (15), the separating device (20) comprising a separating container (21a) accommodating trash and garbage therein;

a vacuum suction device (27) provided at an outlet side of the separating device (20) and generating a suction force so that trash, garbage, and air are sucked through the suction port (15) and the separating container (21a);

a passage portion (28) of which a first portion and a second portion communicate respectively with the separating device (20) and the vacuum suction device (27) to connect the separating

- device (20) and the vacuum suction device (27) to each other;
- a collection container (30) provided at a lower portion of the separating device (20);
- a collection bag (40) provided in the collection container 30 and accommodating trash therein;
- a bag fixing means provided at one side of the separating container (21a) and fixing an upper end of the collection bag (40); and
- a suction passage (45a) of which a lower end and an upper end communicate respectively with an inner upper portion of the collection container (30) and an inner lower portion of the passage portion (28) to suck air included in a flow space (41) between the collection bag (40) and the collection container (30), wherein the flow space (41) is provided between the collection bag (40) and the collection container (30), and is a space where air flows.
2. The trash and garbage collecting apparatus using a bag of claim 1, wherein the separating device (20) comprises:
- a body part (21);
- a separating container (21a) provided in the body part (21) and accommodating garbage and air from the suction port (15); and
- a separating plate (23) provided at a lower portion of the separating container (21a) and separating the separating container (21a) from the collection container (30),
- wherein the bag fixing means comprises:
- a nozzle (23a) provided at one portion of a lower surface of the separating plate (23), communicating with the separating container (21a) and the collection container (30), and allowing trash and garbage passing through the separating container (21a) to be transferred; and
- a nozzle cap (23b) fitted over and coupled to an outer circumferential surface of the nozzle (23a), and provided to gather and attach an upper portion of the collection bag (40), wherein the upper portion of the collection bag (40) is securely fitted between an outer circumferential surface of the nozzle (23a) and an inner circumferential surface of the nozzle cap (23b), and the separating device (20) is coupled to the collection container (30) while a central portion and a lower portion of the collection bag (40) are disposed in the collection container (30).
3. The trash and garbage collecting apparatus using a bag of claim 1, wherein the separating device (20) comprises:
- a conical basket (22) provided at an inner upper portion of a separating container (21a) and provided for air sucked from the separating container (21a) to flow,
- wherein the conical basket (22) has a conical form of which a diameter is reduced in a direction from an upper portion to a lower portion, and has a plurality of through holes (22a) formed through an outer circumferential surface to allow air sucked by the vacuum suction device (27) to pass therethrough.
4. The trash and garbage collecting apparatus using a bag of claim 1, wherein the separating device (20) comprises:
- a first cylindrical basket (25a) which communicates with the passage portion (28) and a separating container (21a), has a cylindrical shape with an open upper portion, and allows air sucked from the separating container (21a) to flow,
- wherein the first cylindrical basket (25a) has a plurality of through holes (22a) which is formed through an outer circumferential surface thereof and allows air sucked by the vacuum suction device (27) to pass therethrough.
5. The trash and garbage collecting apparatus using a bag of claim 1, wherein the separating device (20) comprises:
- an outlet (24) provided in the passage portion (28) communicating with the vacuum suction device (27), and allowing air flowing into the separating device (20) to pass; and
- a suction filter (24a) provided at an upper portion of the outlet (24) and filtering fine dust included in the air passing through the outlet (24).
6. The trash and garbage collecting apparatus using a bag of claim 1, wherein the separating device (20) comprises:
- a second cylindrical basket (25b) which communicates with the passage portion (28) and a separating container (21a), has a cylindrical shape with open upper and lower portions, and allows air sucked from the separating container (21a) to flow.
7. The trash and garbage collecting apparatus using a bag of claim 1, wherein a pressure drop occurs in air passing through the separating device (20), and a suction pressure (P1) is formed lower than an internal pressure (P2) by a pressure drop value (ΔP),
- the suction passage (45a) has an upper end and a lower end respectively communicating with the collection container (30) and the passage portion

- tion (28), and a spatial pressure (P3) is formed equal to the suction pressure (P1), the spatial pressure (P3) is formed lower than the internal pressure (P2) by the pressure drop value (ΔP), and the collection bag (40) has a shape inflated toward an inner circumferential surface of the collection container (30) by air having the internal pressure (P2) (However, P1: pressure of air included in the passage portion (28), P2: pressure of air in the collection bag (40), P3: pressure of air in the flow space (41) between the collection bag (40) and the collection container (30)).
8. The trash and garbage collecting apparatus using a bag of claim 1, wherein the separating device (20) comprises:
- a body part (21), and
 - a separating container (21a) provided in the body part (21) and accommodating trash, garbage, and air from the suction port (15), wherein the separating container (21a) comprises
 - a spiral guide vein (21b) on an inner circumferential surface thereof to allow the trash passing through the suction port (15) to be transferred toward the collection container (30).
9. The trash and garbage collecting apparatus using a bag of claim 1, wherein the separating device (20) comprises:
- a body part (21), and
 - a separating container (21a) provided in the body part (21) and accommodating trash, garbage, and air from the suction port (15), wherein the separating container (21a) comprises
 - an inclined part (23c) formed on an inner circumferential surface thereof and allowing the trash accommodated in the separating container (21a) to be transferred toward a nozzle (23a).
10. The trash and garbage collecting apparatus using a bag of claim 1, wherein the separating device (20) comprises:
- a body part (21), and
 - a separating part (21c) provided in the body part (21), wherein the bag fixing means is a nozzle ring (23d) coupled to a lower portion of an outer circumferential surface of the separating part (21c) so as to gather and attach an upper portion of the collection bag (40).
11. The trash and garbage collecting apparatus using a bag of claim 1, wherein the separating device (20) comprises:
- a body part (21), and
 - a separating part (21c) provided in the body part (21); and
 - a conical basket (22) provided at an inner upper portion of the separating part (21c) and allowing air sucked from the separating part (21c) to flow, wherein the conical basket (22) has a conical form of which a diameter is reduced in a direction from an upper portion to a lower portion, and has a plurality of through holes (22a) formed through an outer circumferential surface to allow air sucked by the vacuum suction device (27) to pass therethrough.
12. The trash and garbage collecting apparatus using a bag of claim 1, wherein the separating device (20) comprises:
- a body part (21), and
 - a separating part (21c) provided in the body part (21); and
 - a first cylindrical basket (25a) which communicates with the passage portion (28) and the separating part (21c), has a cylindrical shape with an open upper portion, and allows air sucked from the separating part (21c) to flow therethrough, wherein the first cylindrical basket (25a) has a plurality of through holes (22a) which is formed through an outer circumferential surface thereof and allows air sucked by the vacuum suction device (27) to pass therethrough.
13. The trash and garbage collecting apparatus using a bag of claim 1, wherein the separating device (20) comprises:
- a body part (21), and
 - a separating part (21c) provided in the body part (21); and
 - a second cylindrical basket (25b) which communicates with the passage portion (28) and the separating part (21c), has a cylindrical shape with open upper and lower portions, and allows air sucked from the separating part (21c) to flow.
14. The trash and garbage collecting apparatus using a bag of claim 1, wherein the separating device (20) comprises:
- a body part (21), and
 - a separating part (21c) provided in the body part (21) and accommodating trash, garbage, and air from the suction port (15), wherein the separating part (21c) comprises
 - a spiral guide vein (21b) on an inner circumferential surface thereof to allow the trash passing

through the suction port (15) to be transferred to the collection container (30).

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FIG. 1

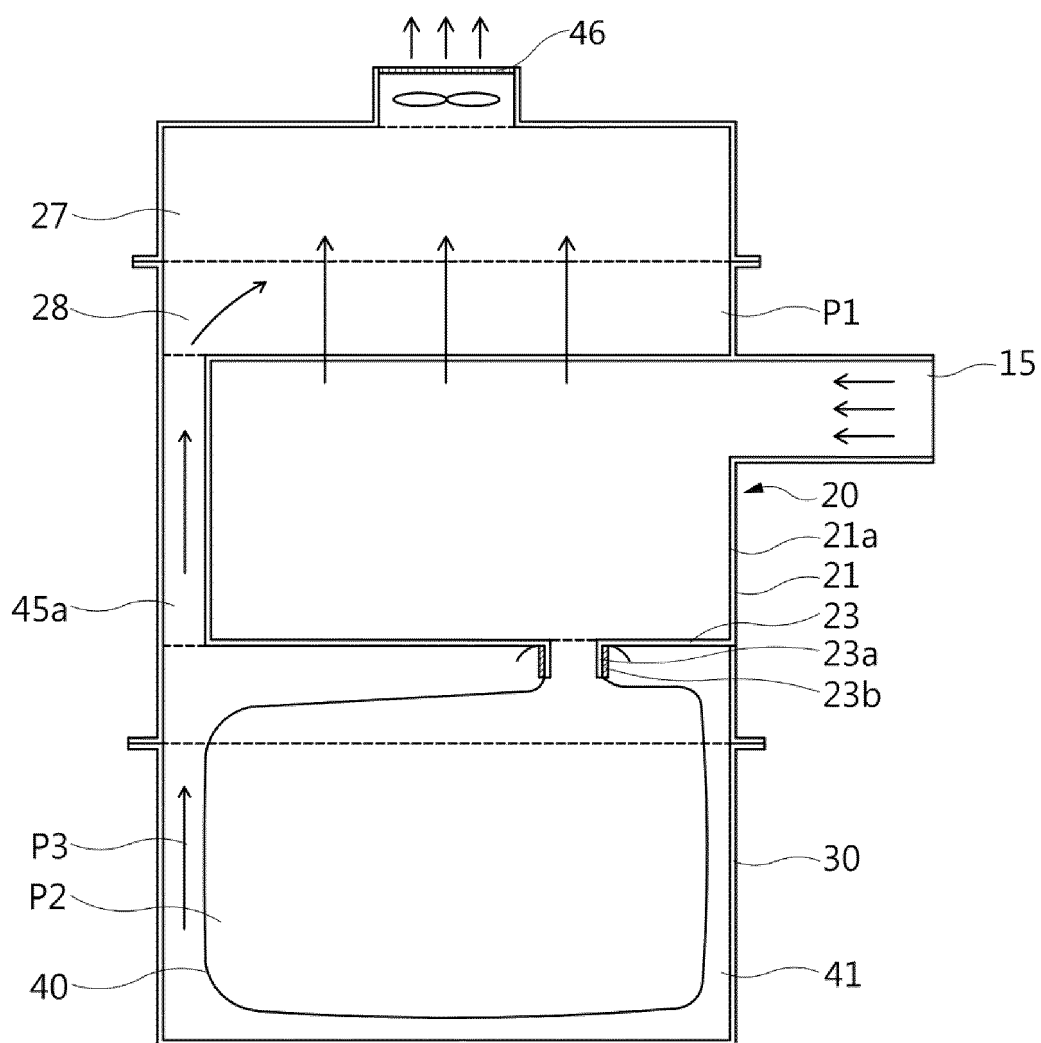


FIG. 2

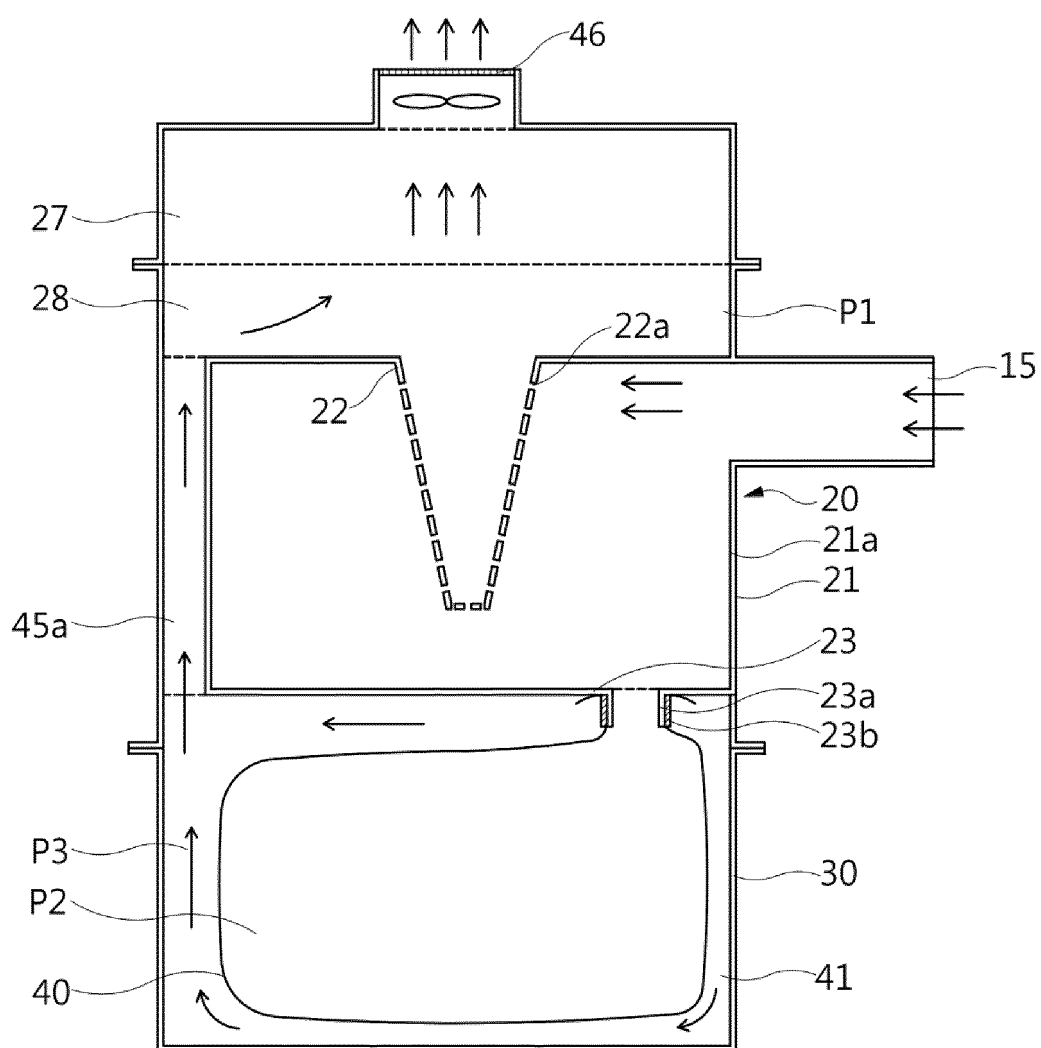


FIG. 3

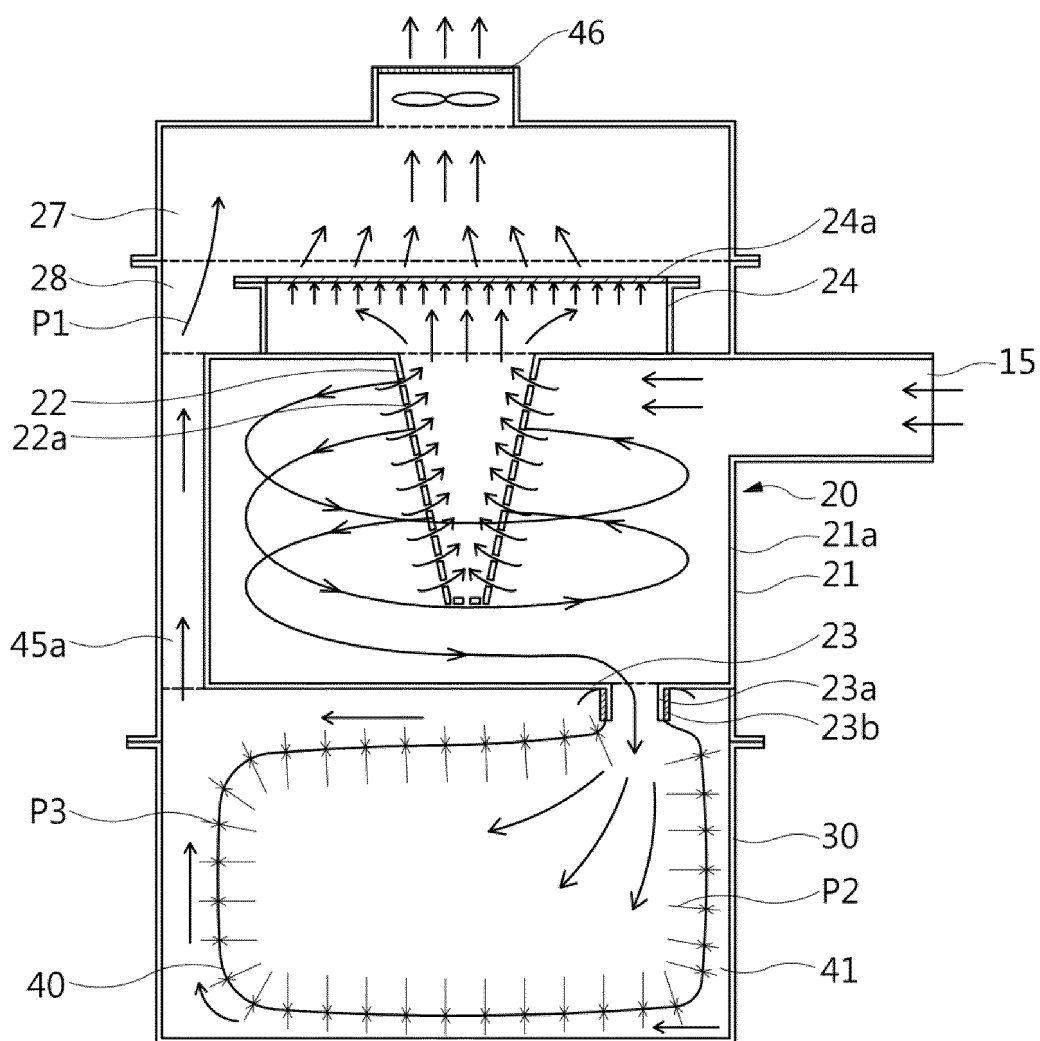


FIG. 4

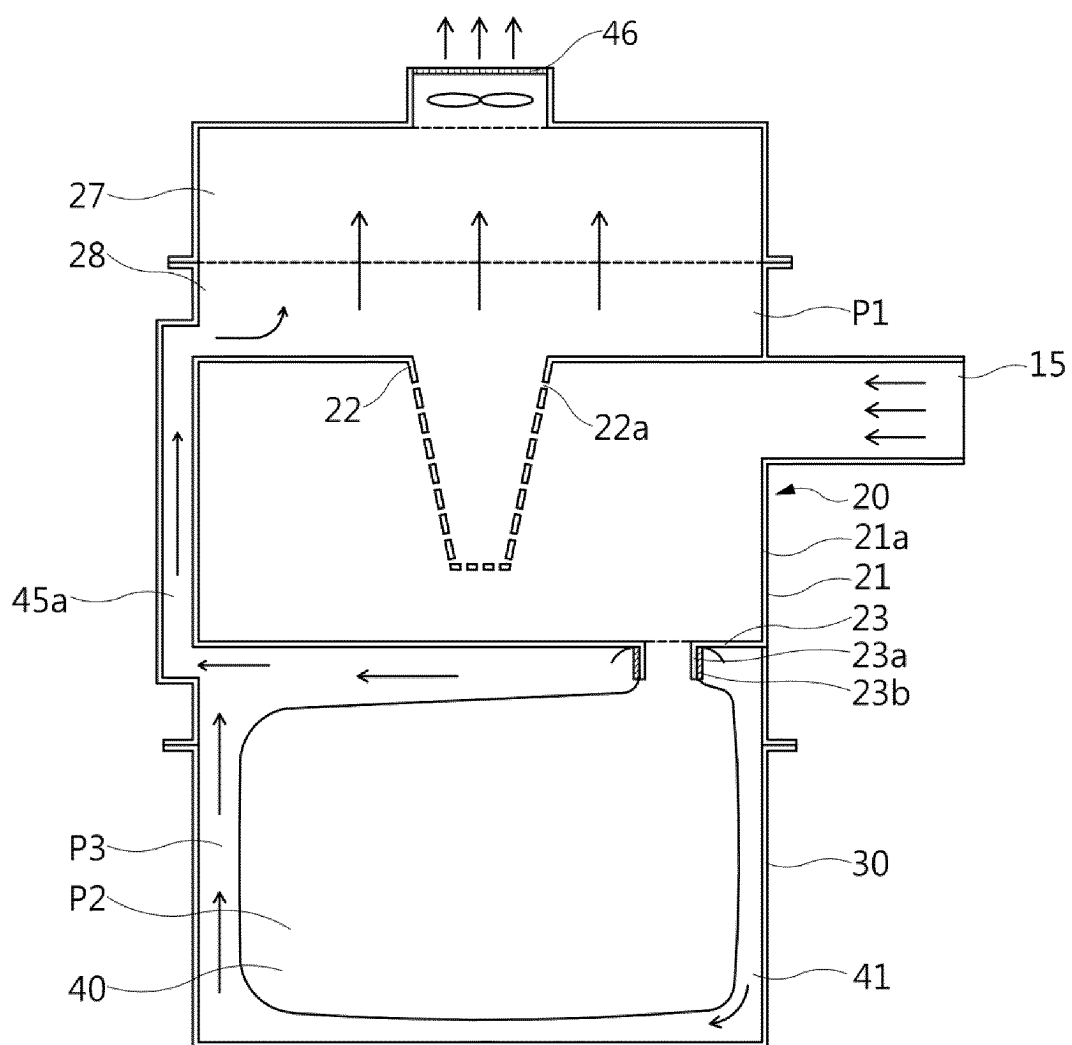


FIG. 5

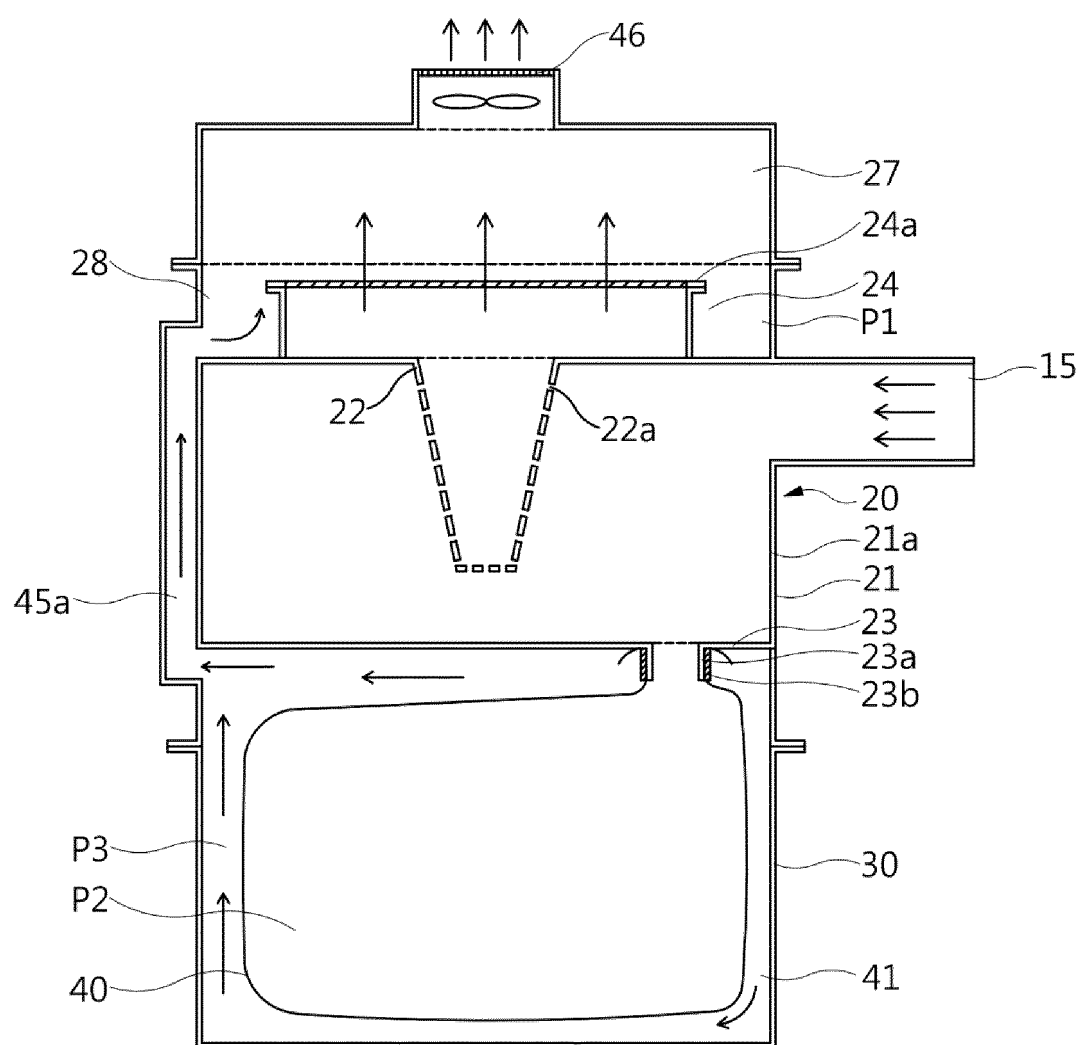


FIG. 6

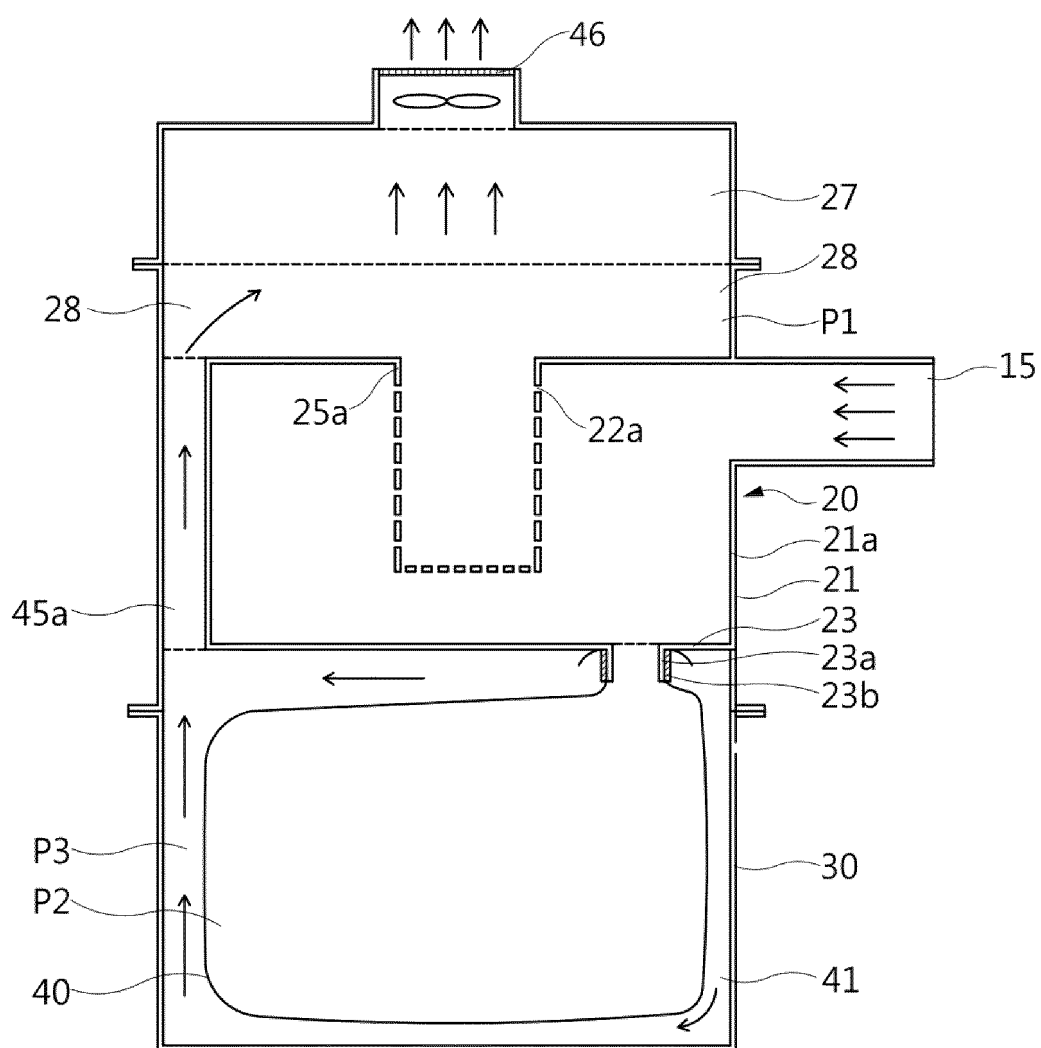


FIG. 7

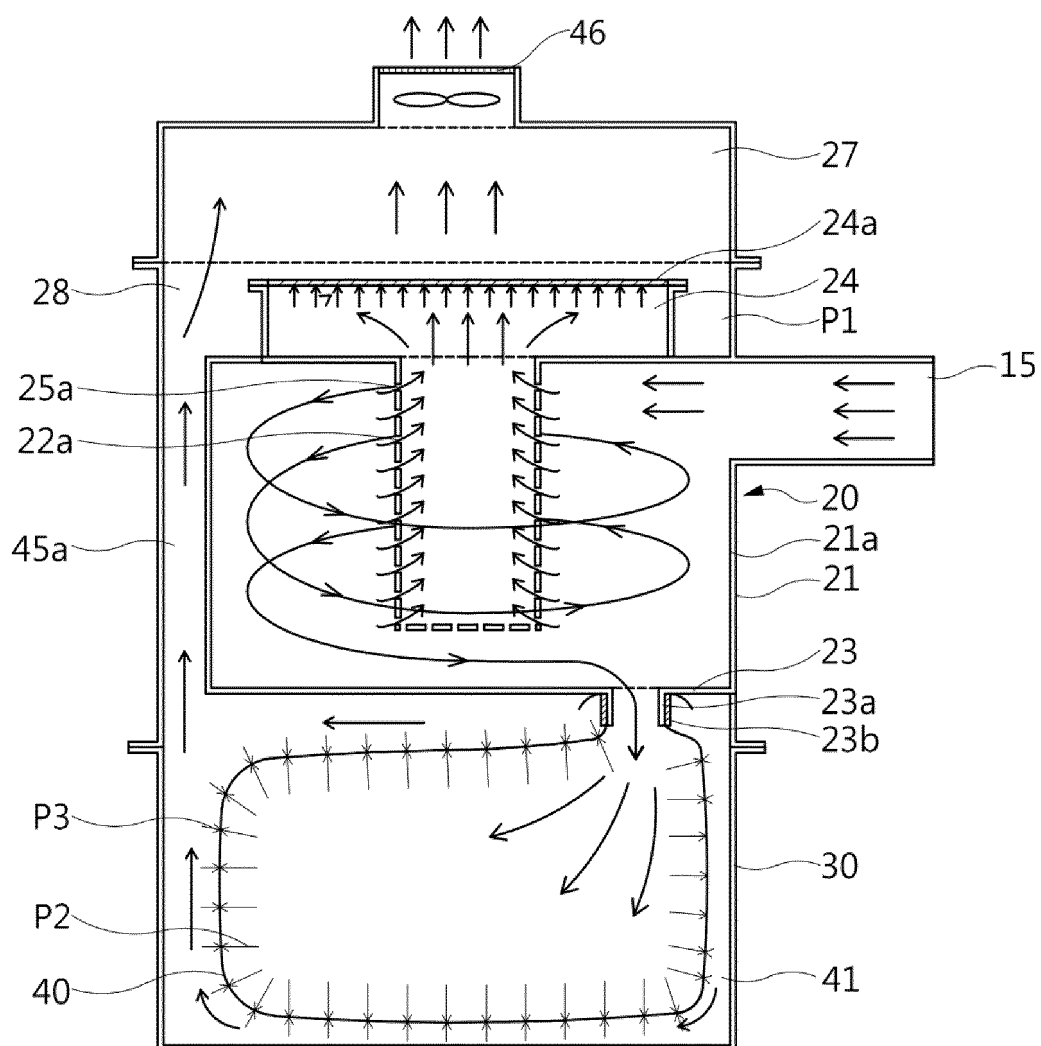


FIG. 8

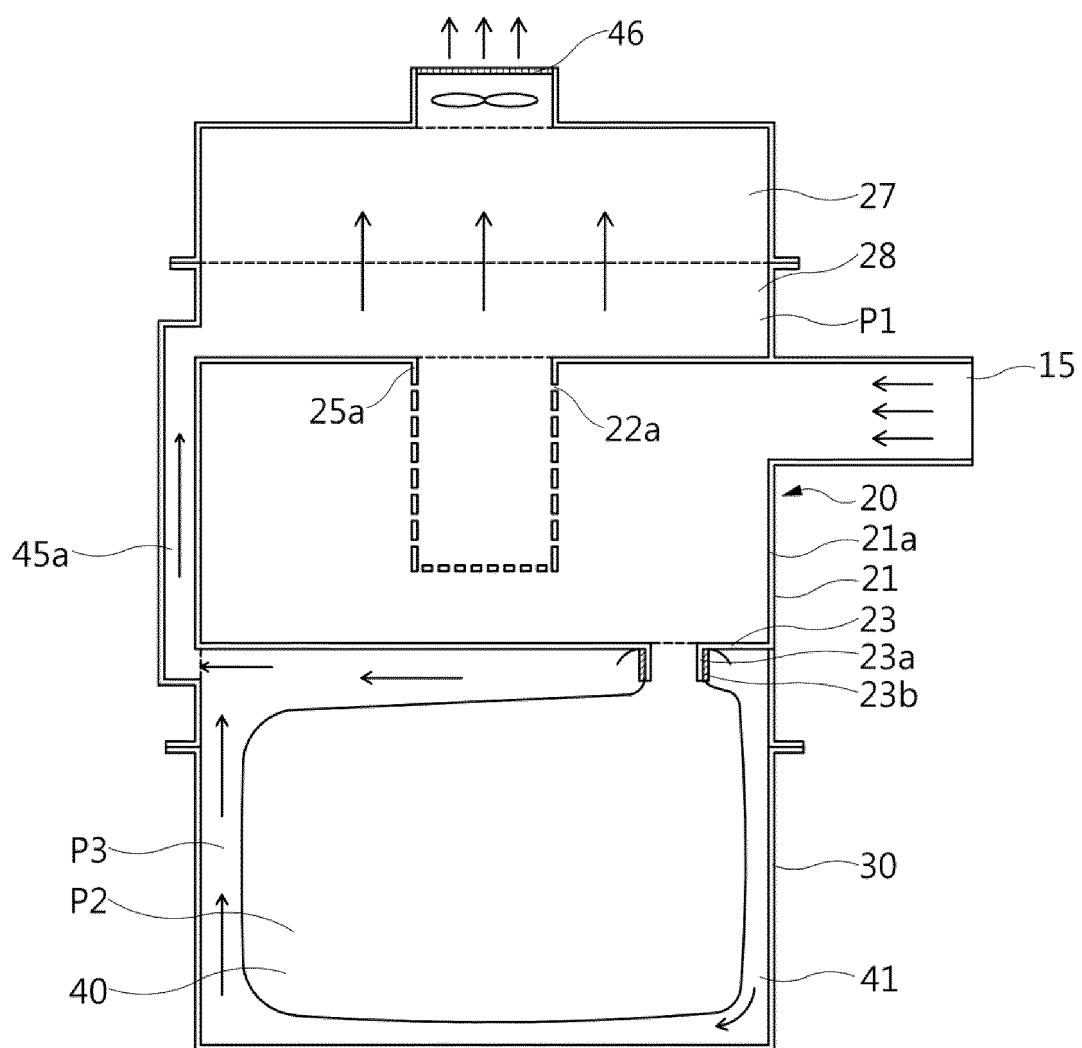


FIG. 9

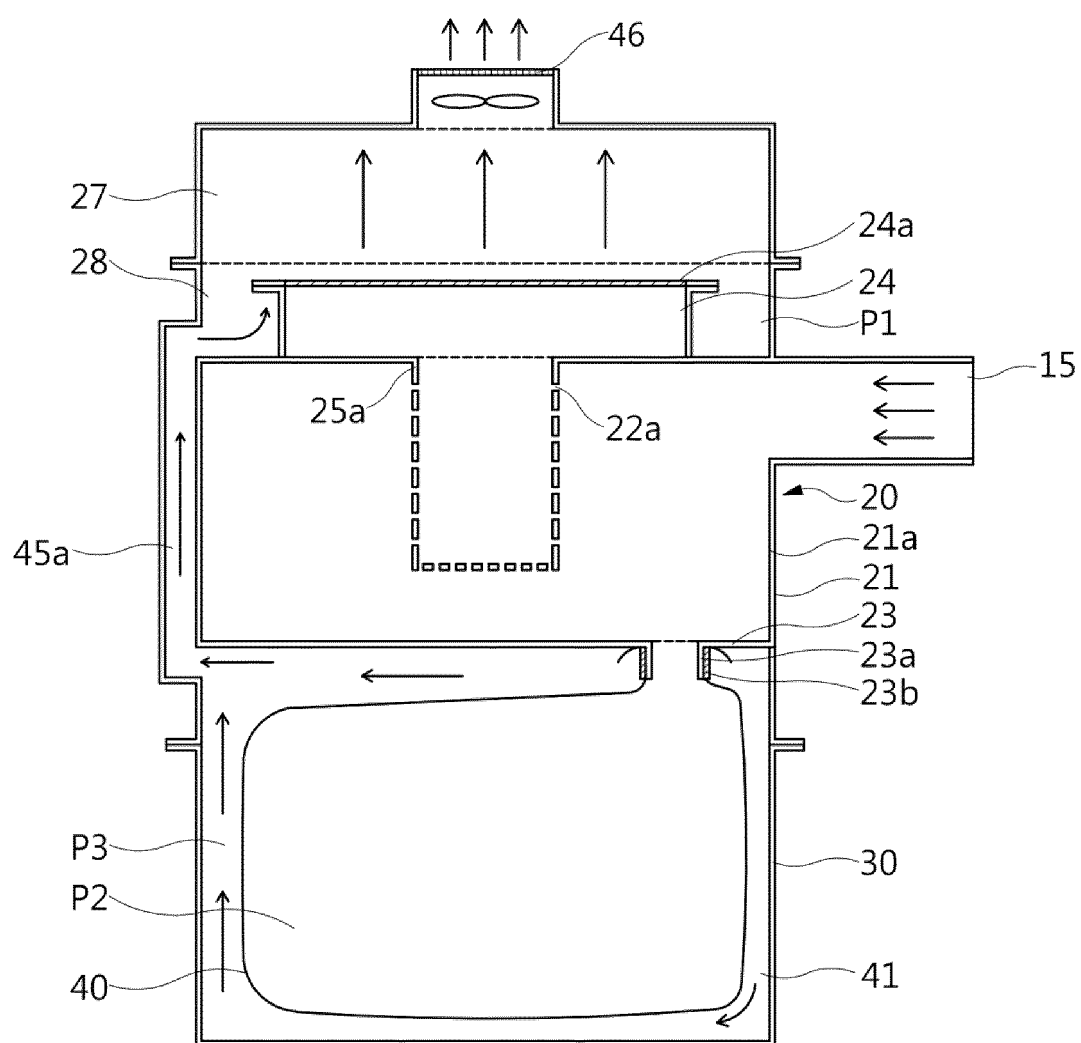


FIG. 10

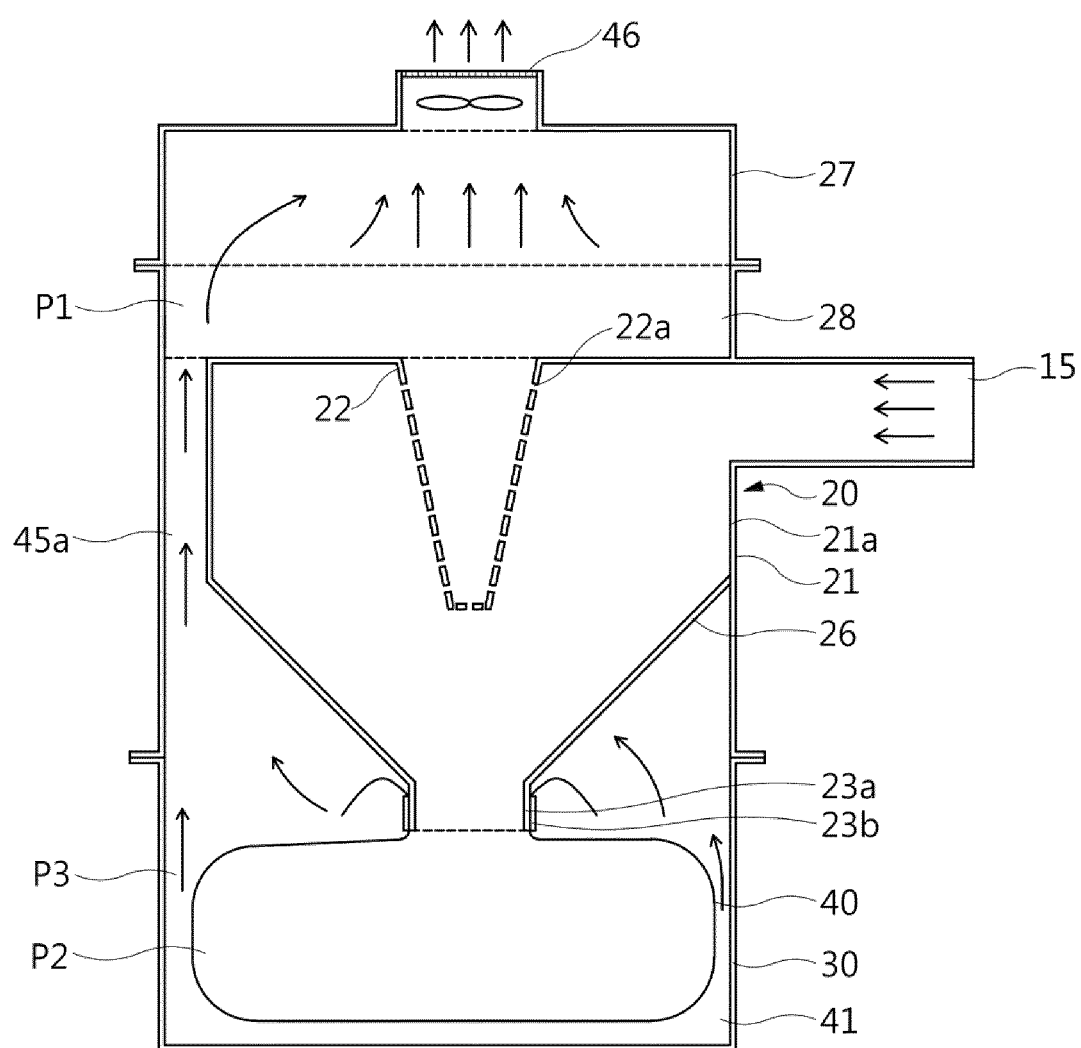


FIG. 11

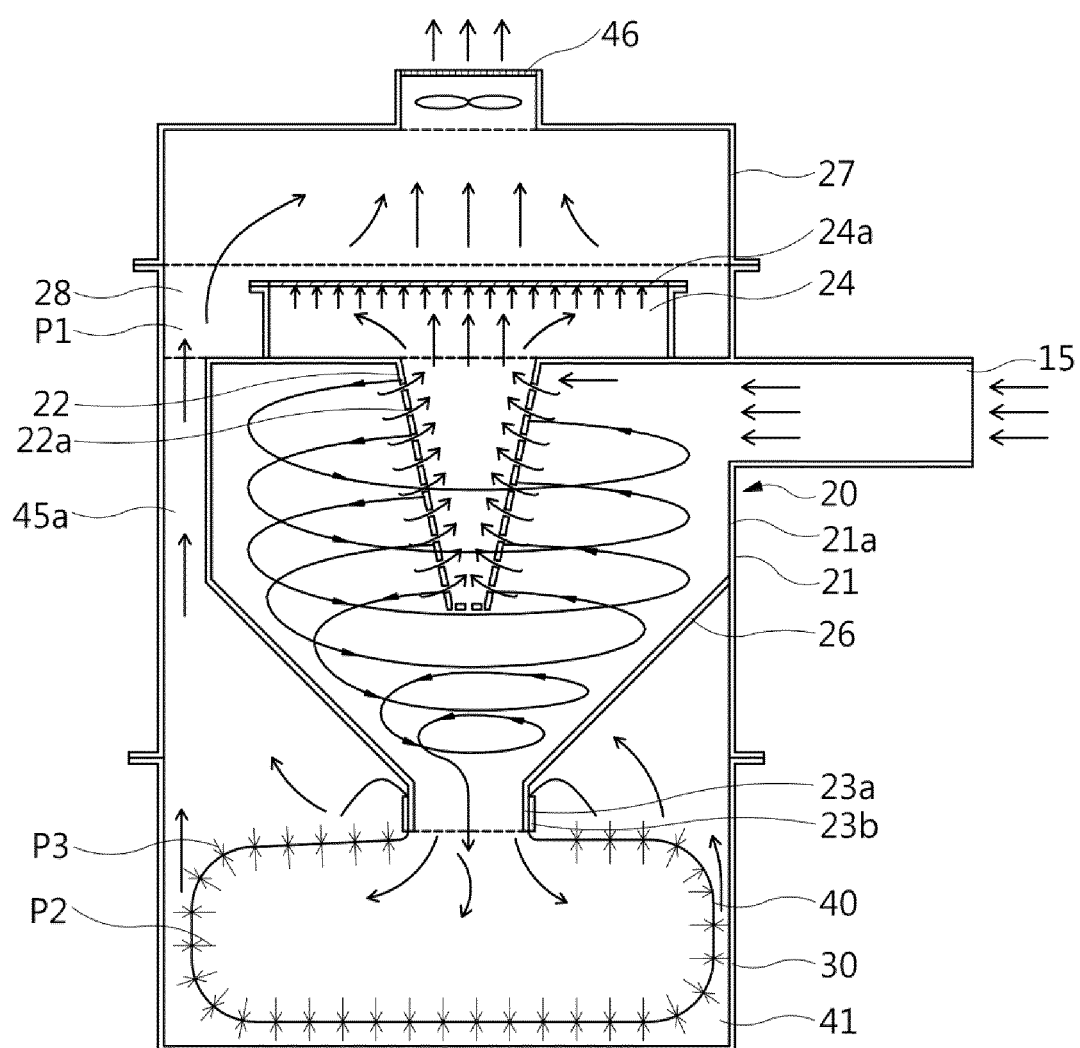


FIG. 12

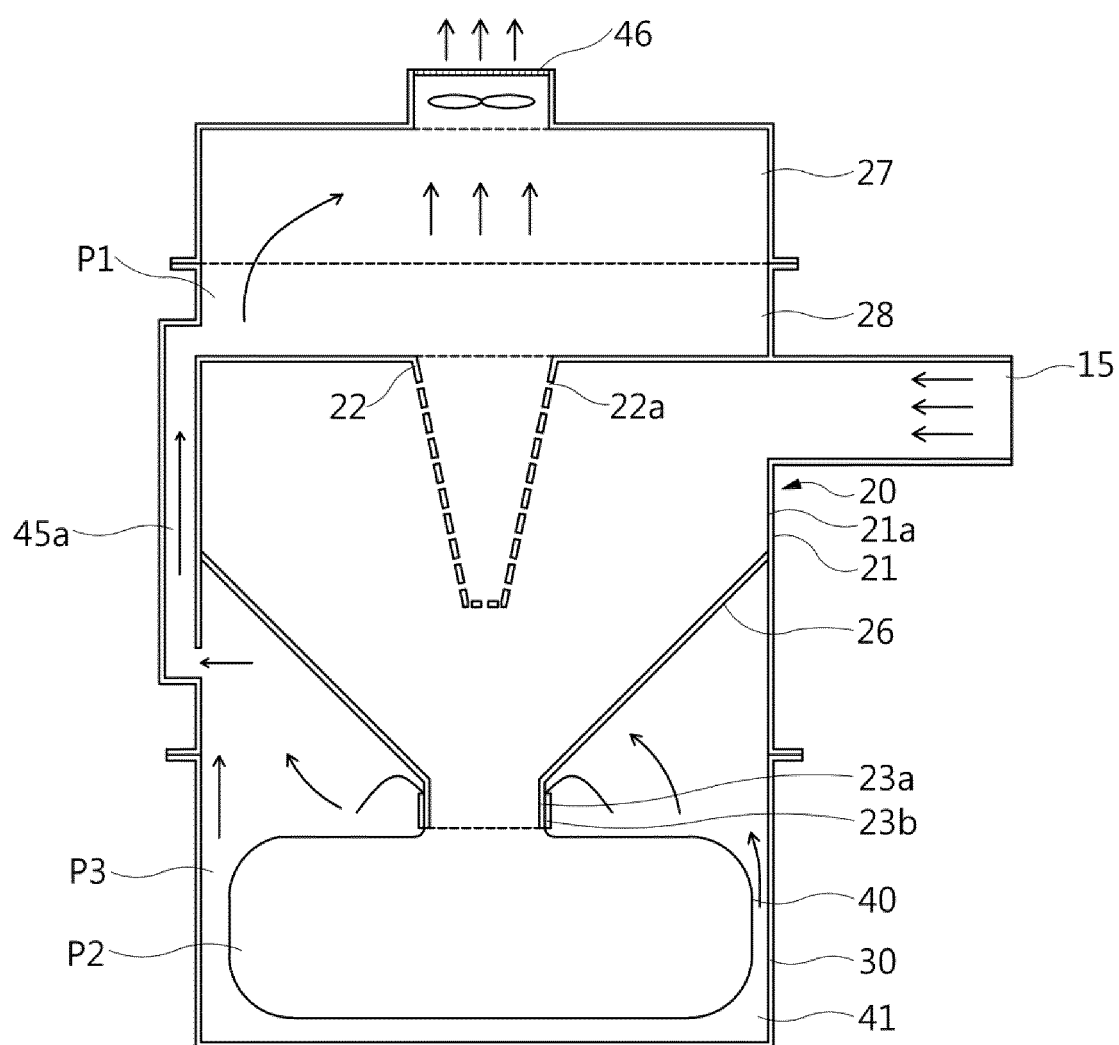


FIG. 13

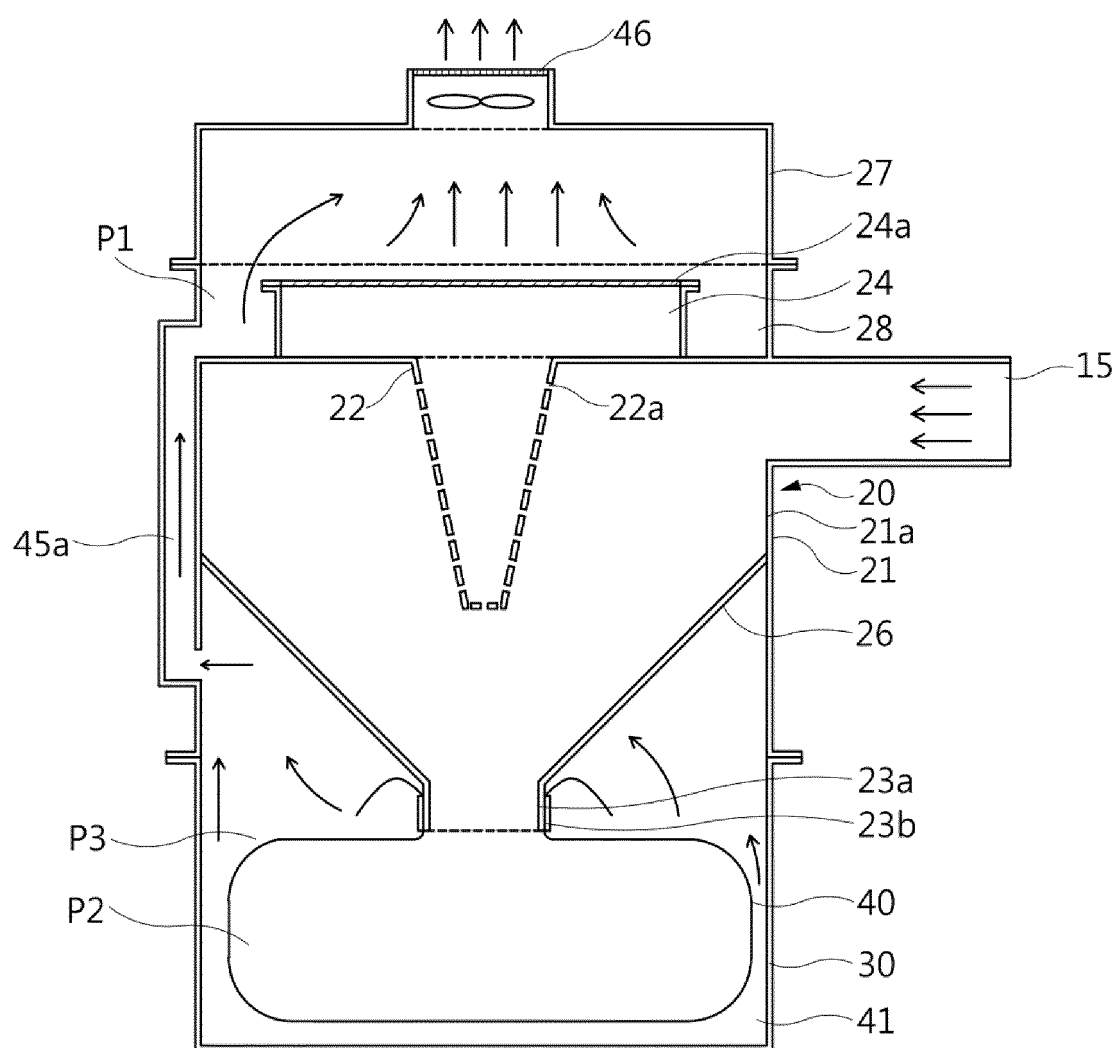


FIG. 14

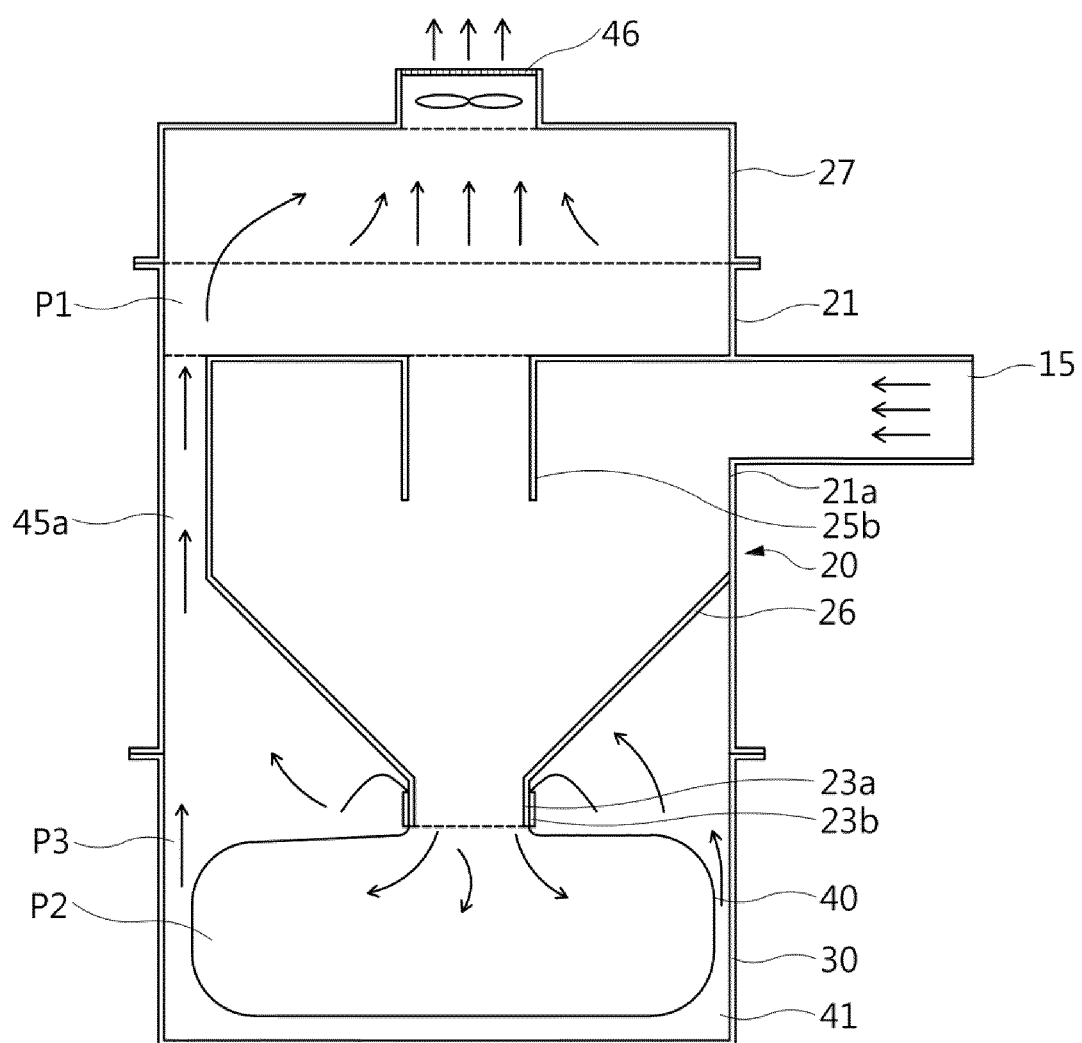


FIG. 15

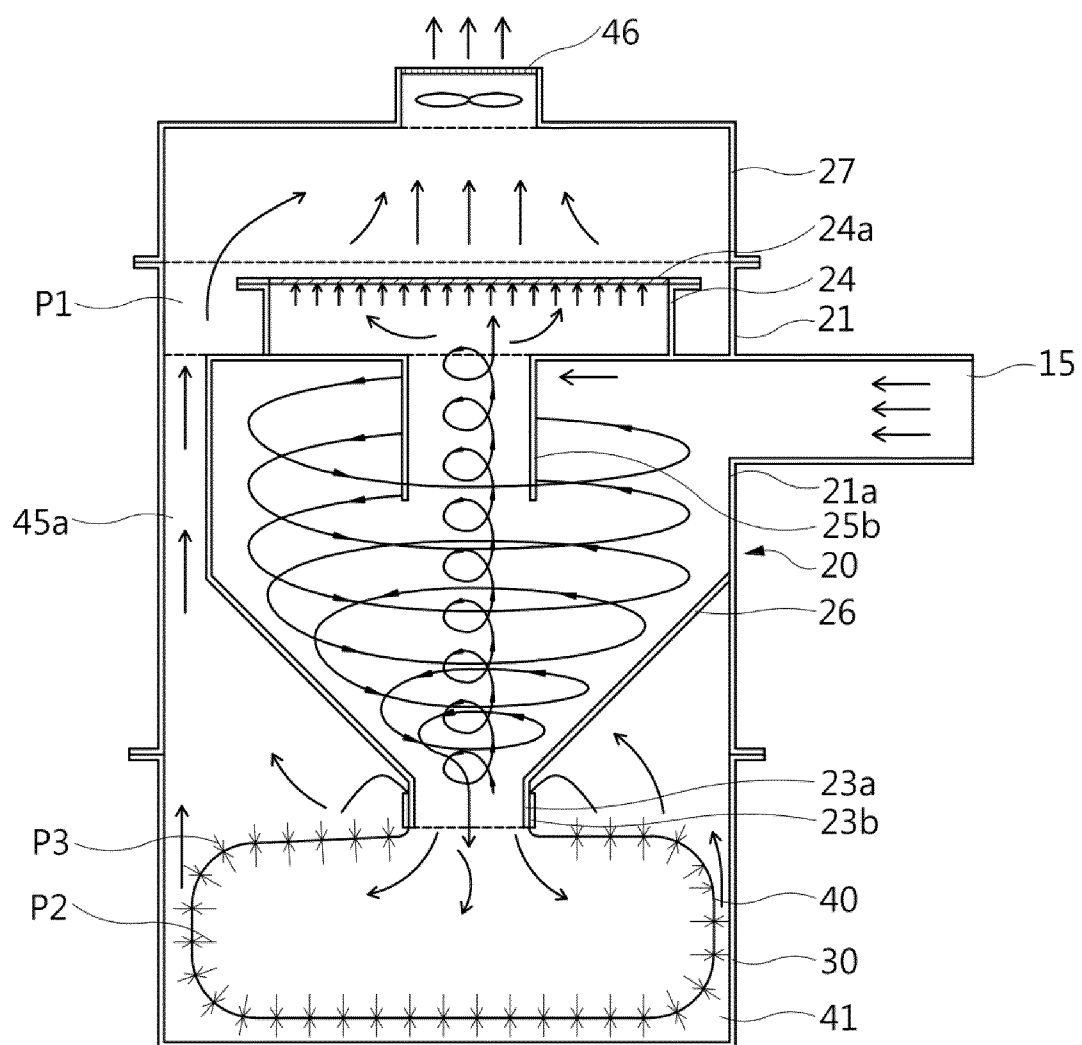


FIG. 16

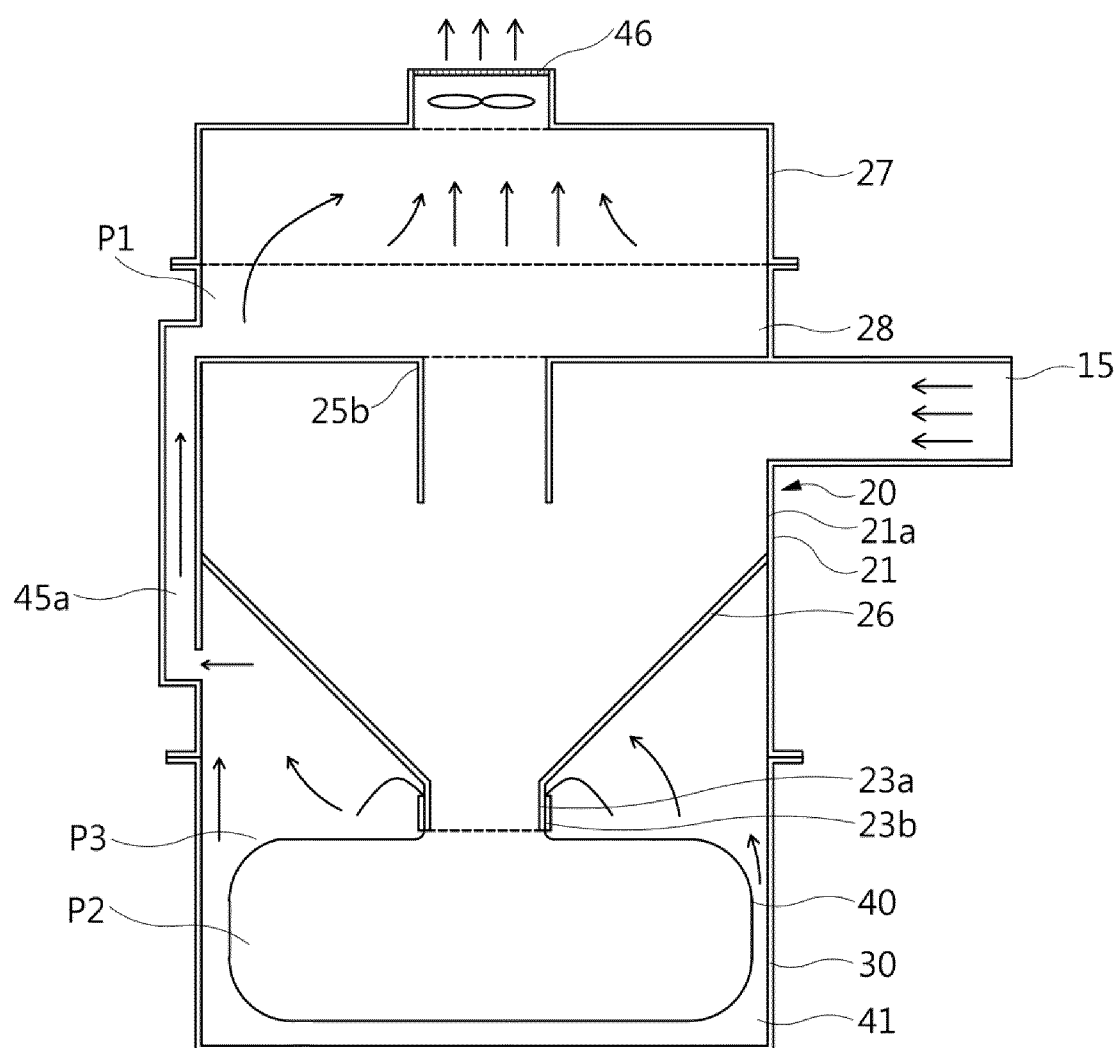


FIG. 17

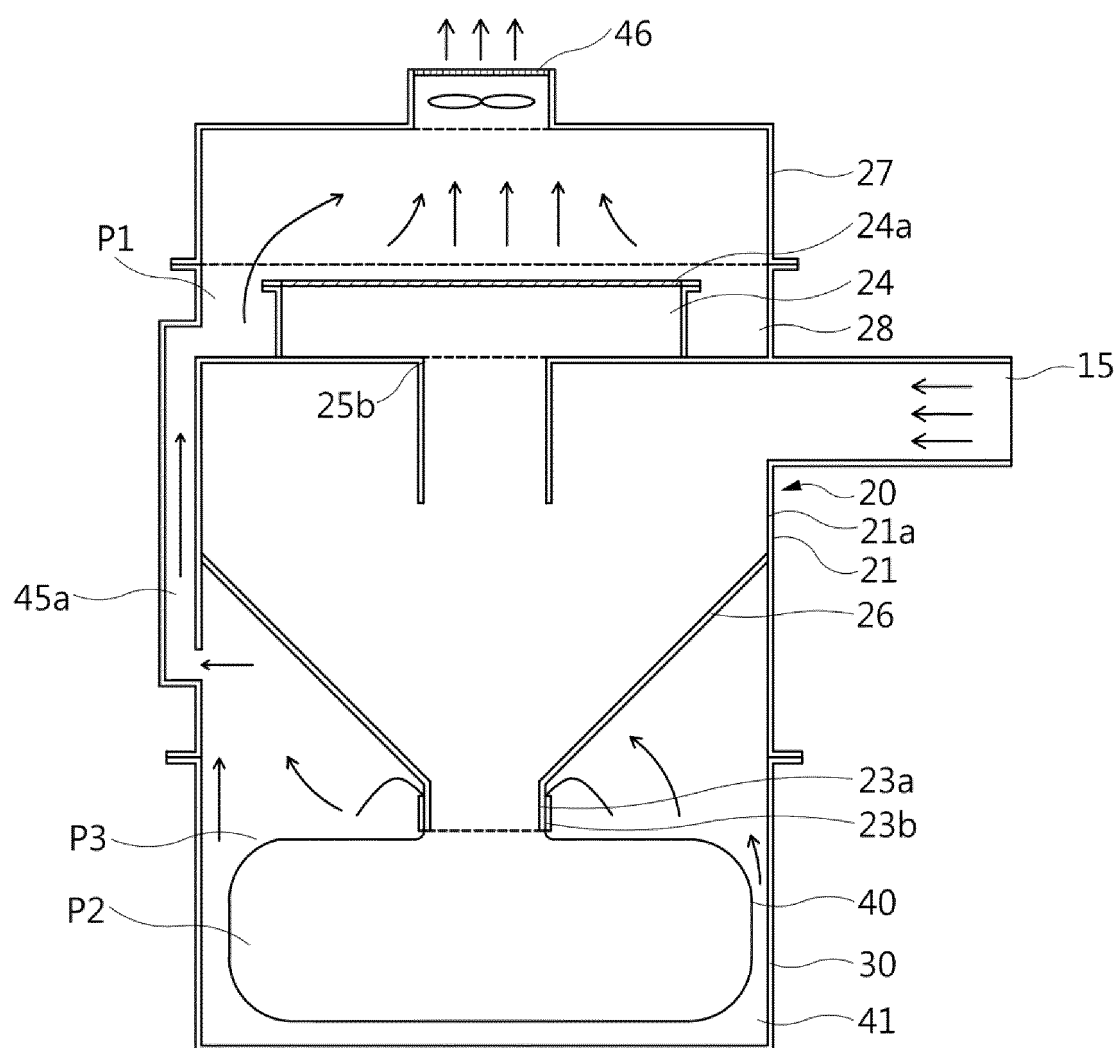


FIG. 18

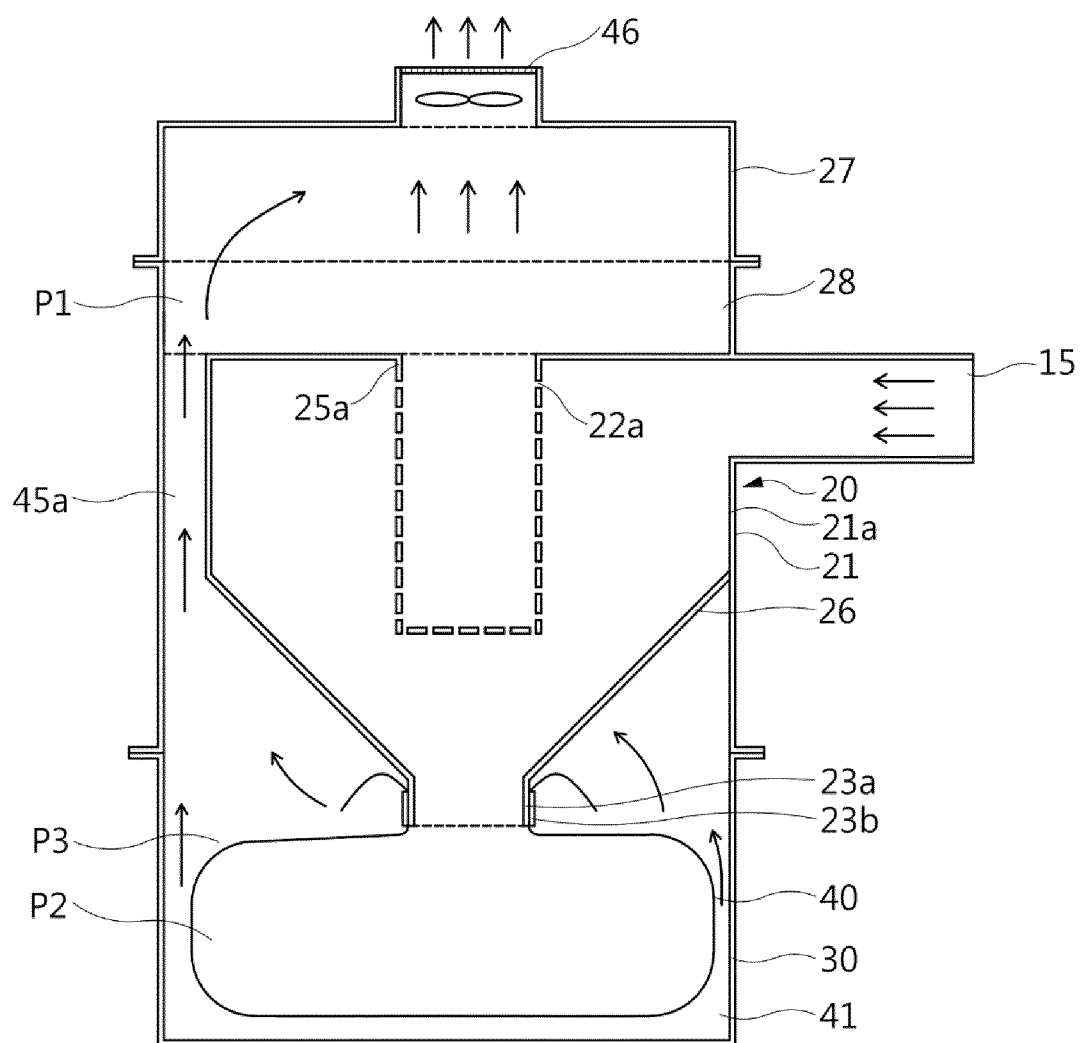


FIG. 19

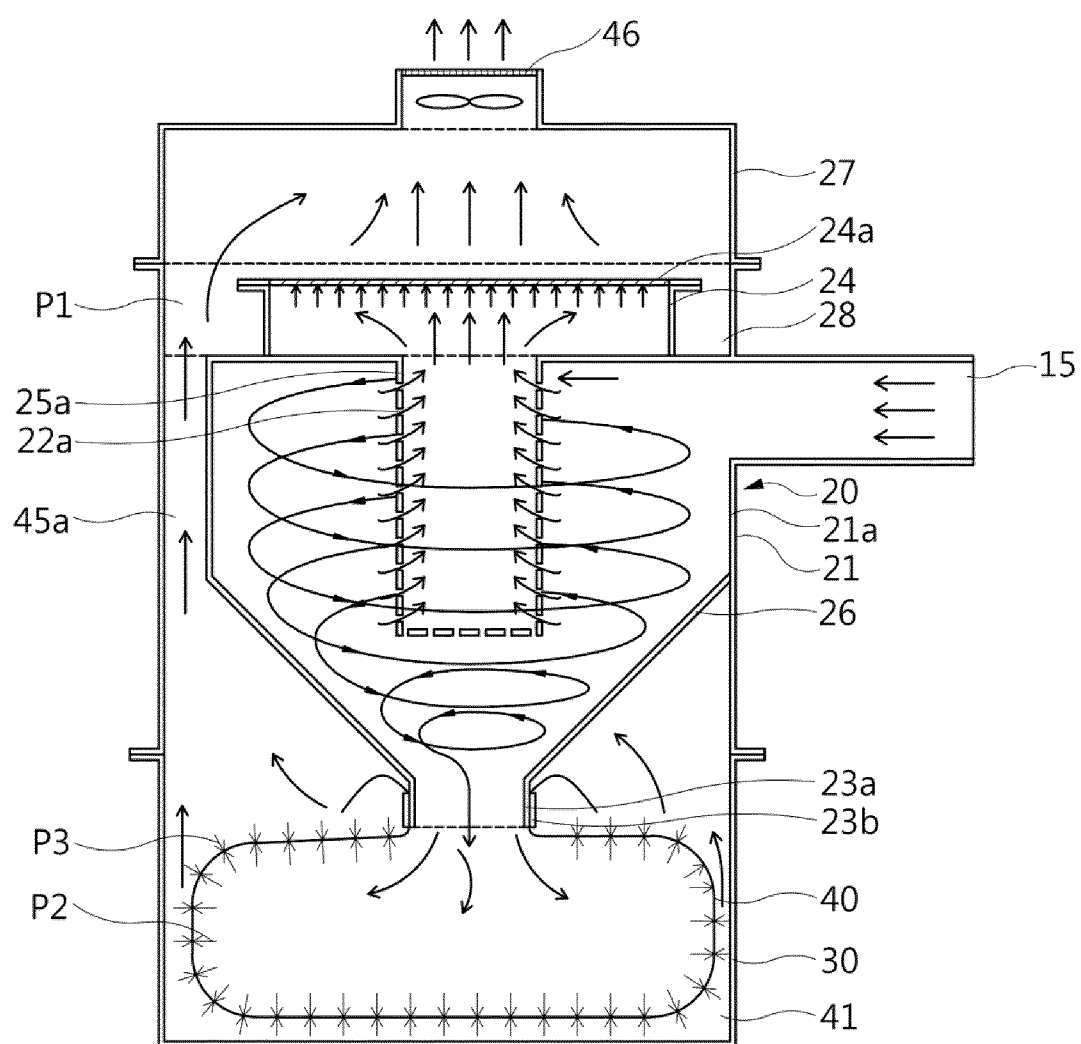


FIG. 20

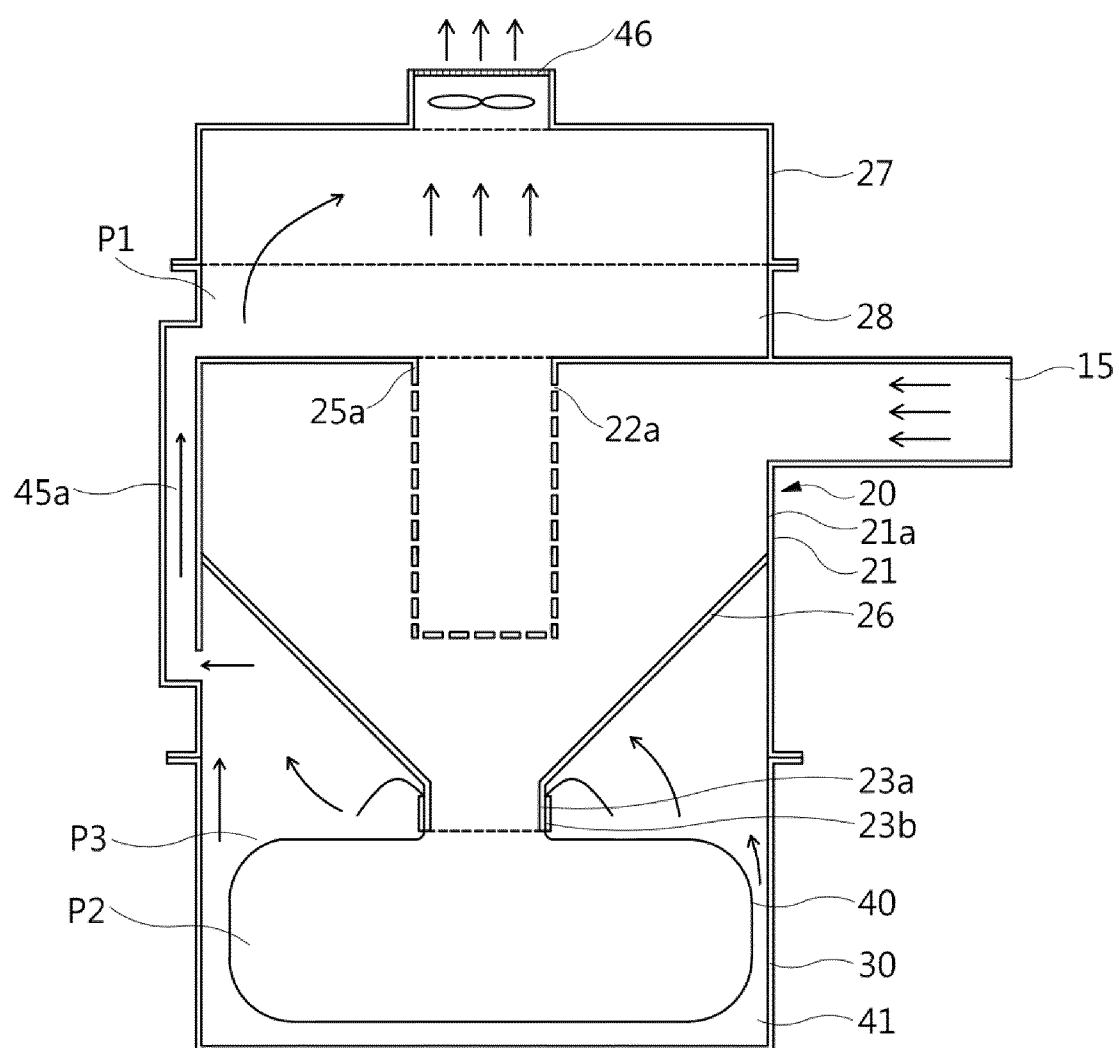


FIG. 21

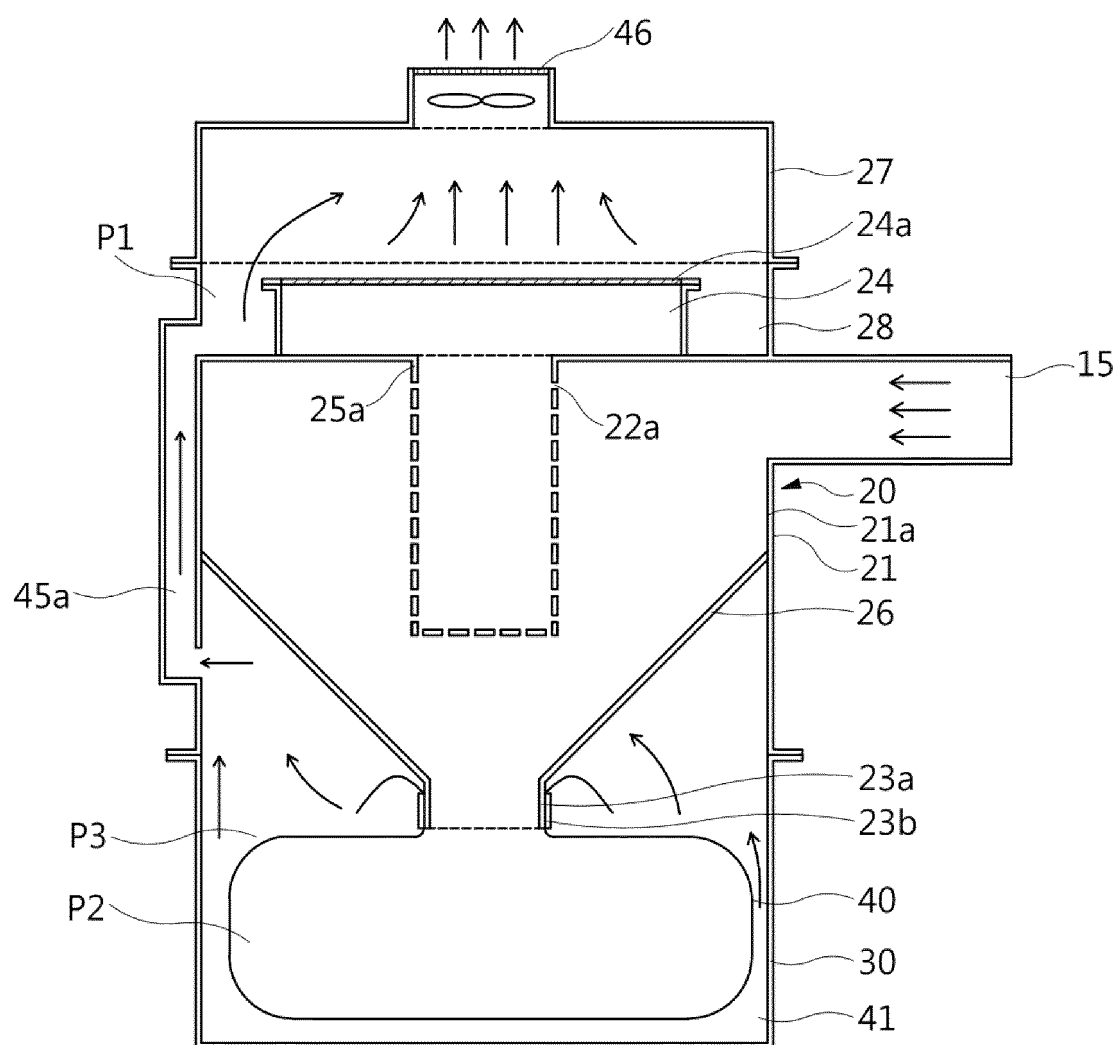


FIG. 22

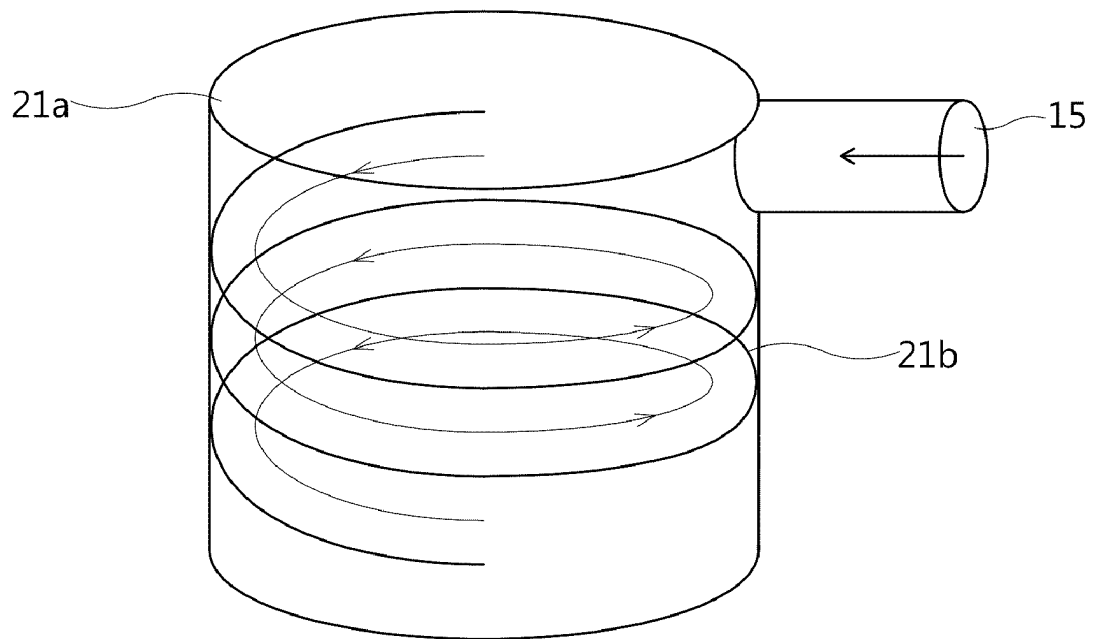


FIG. 23

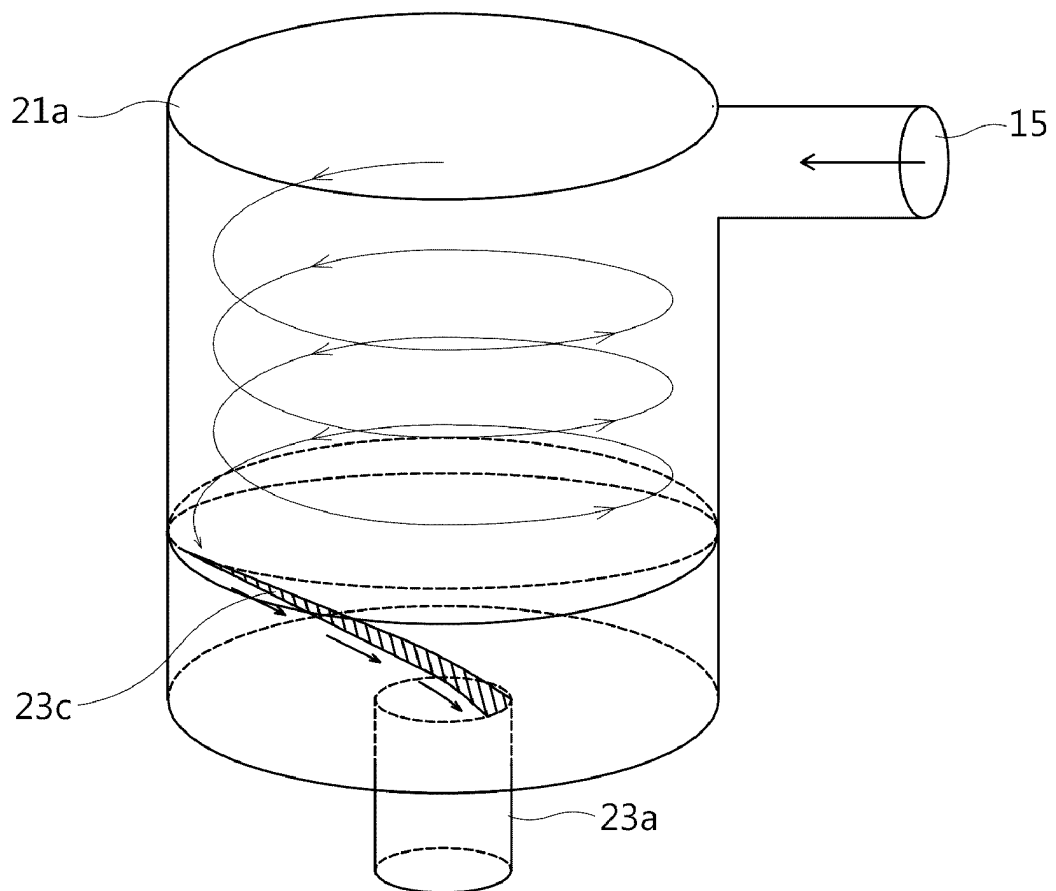


FIG. 24

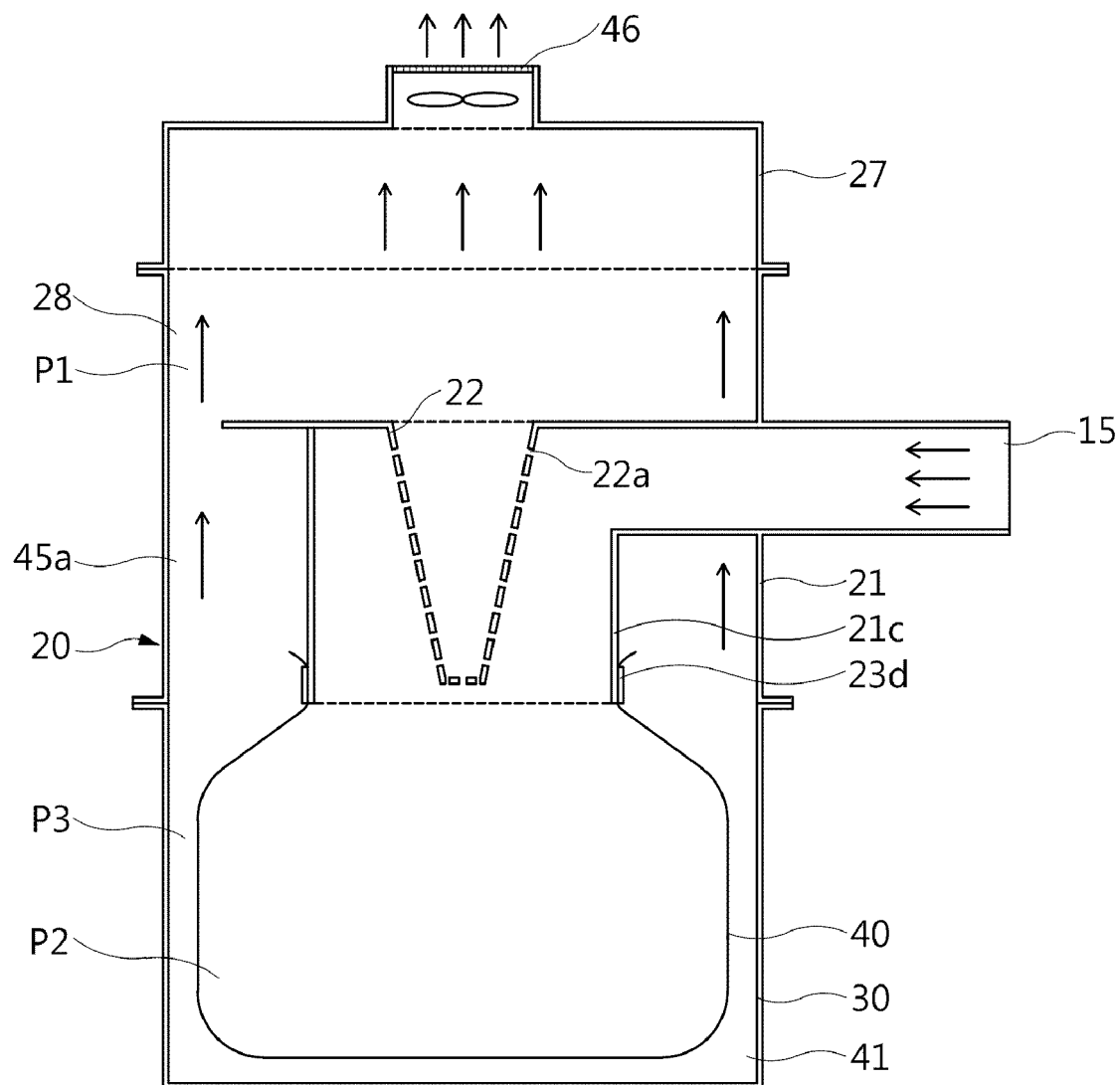


FIG. 25

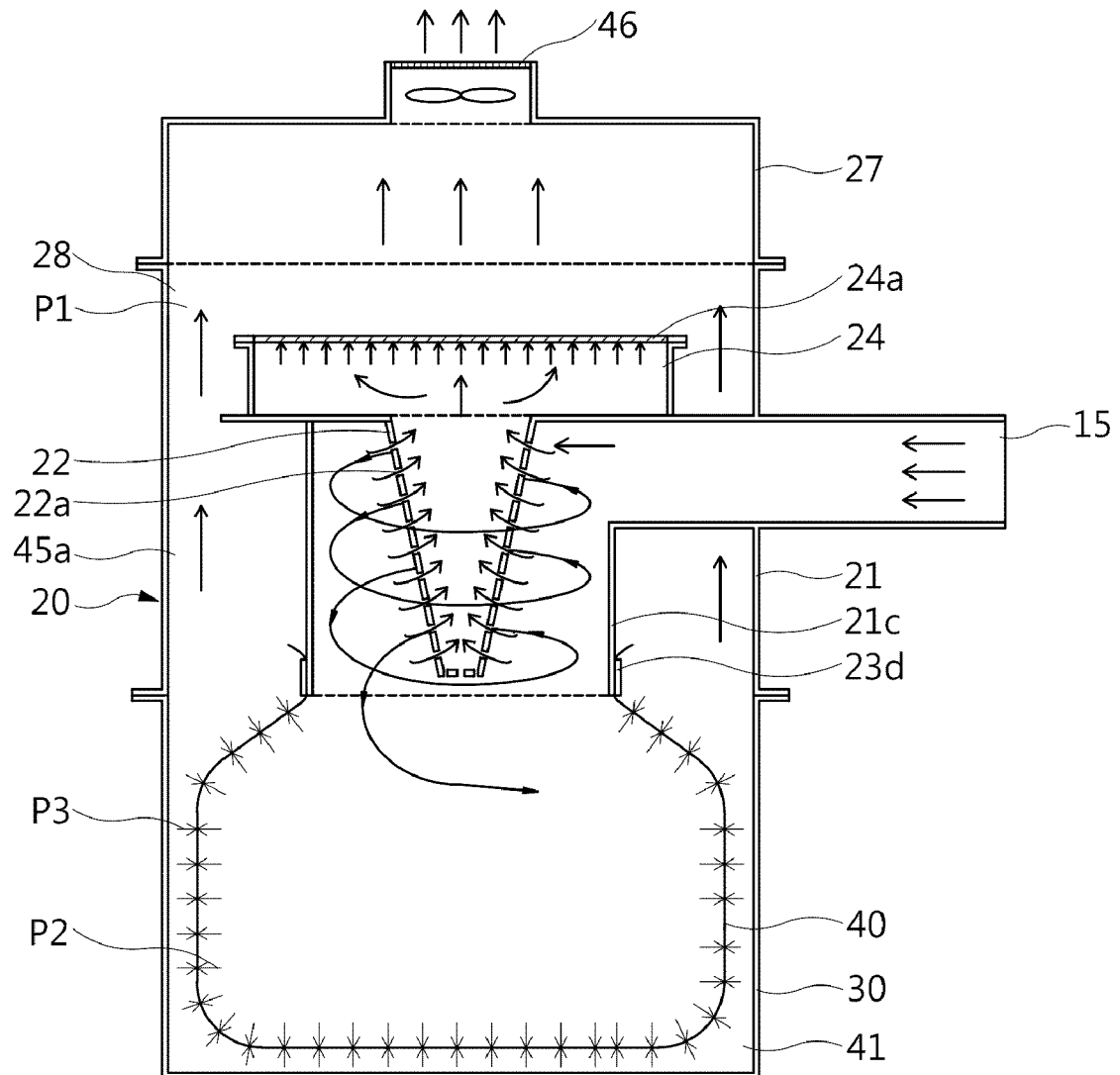


FIG. 26

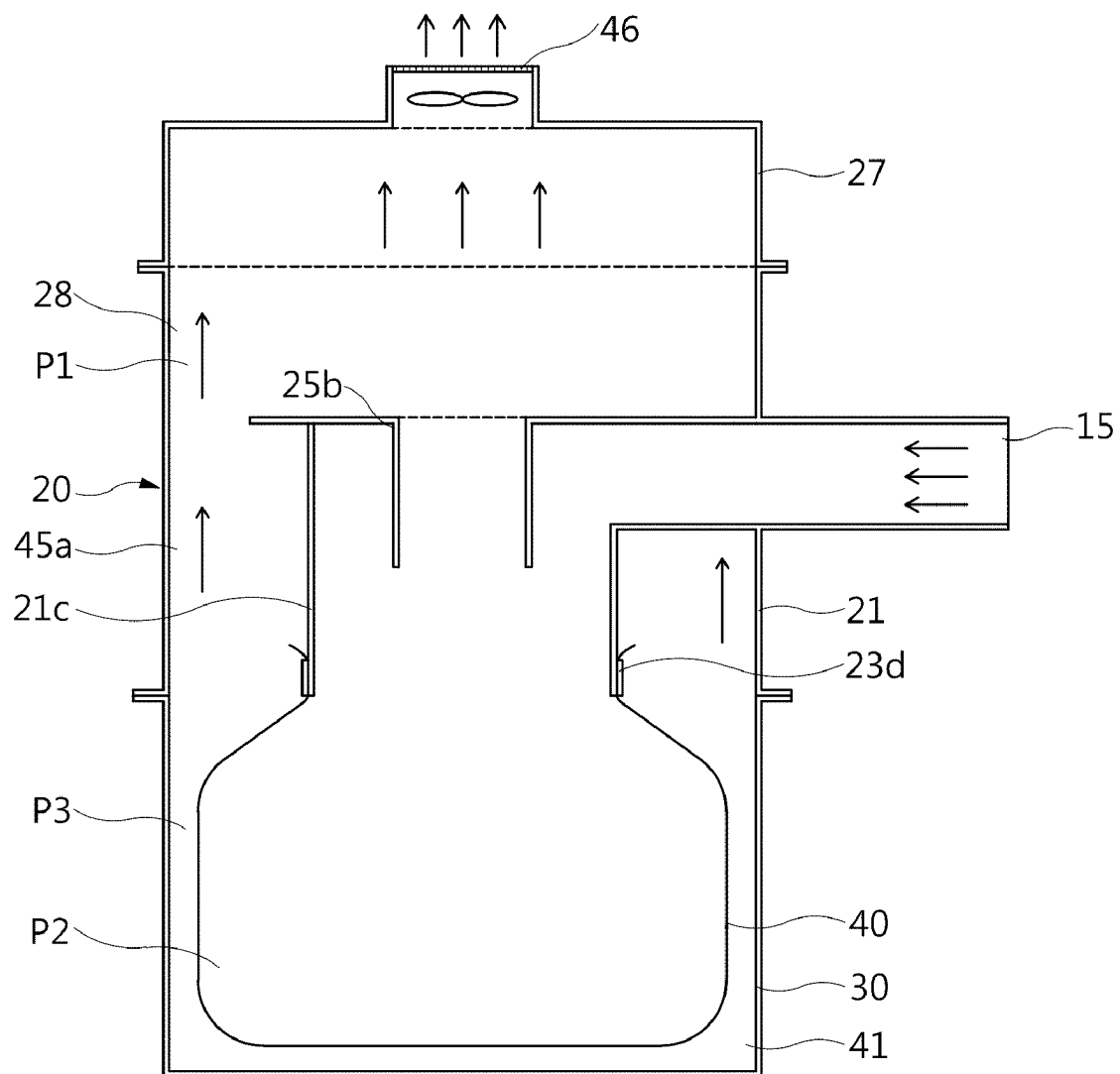


FIG. 27

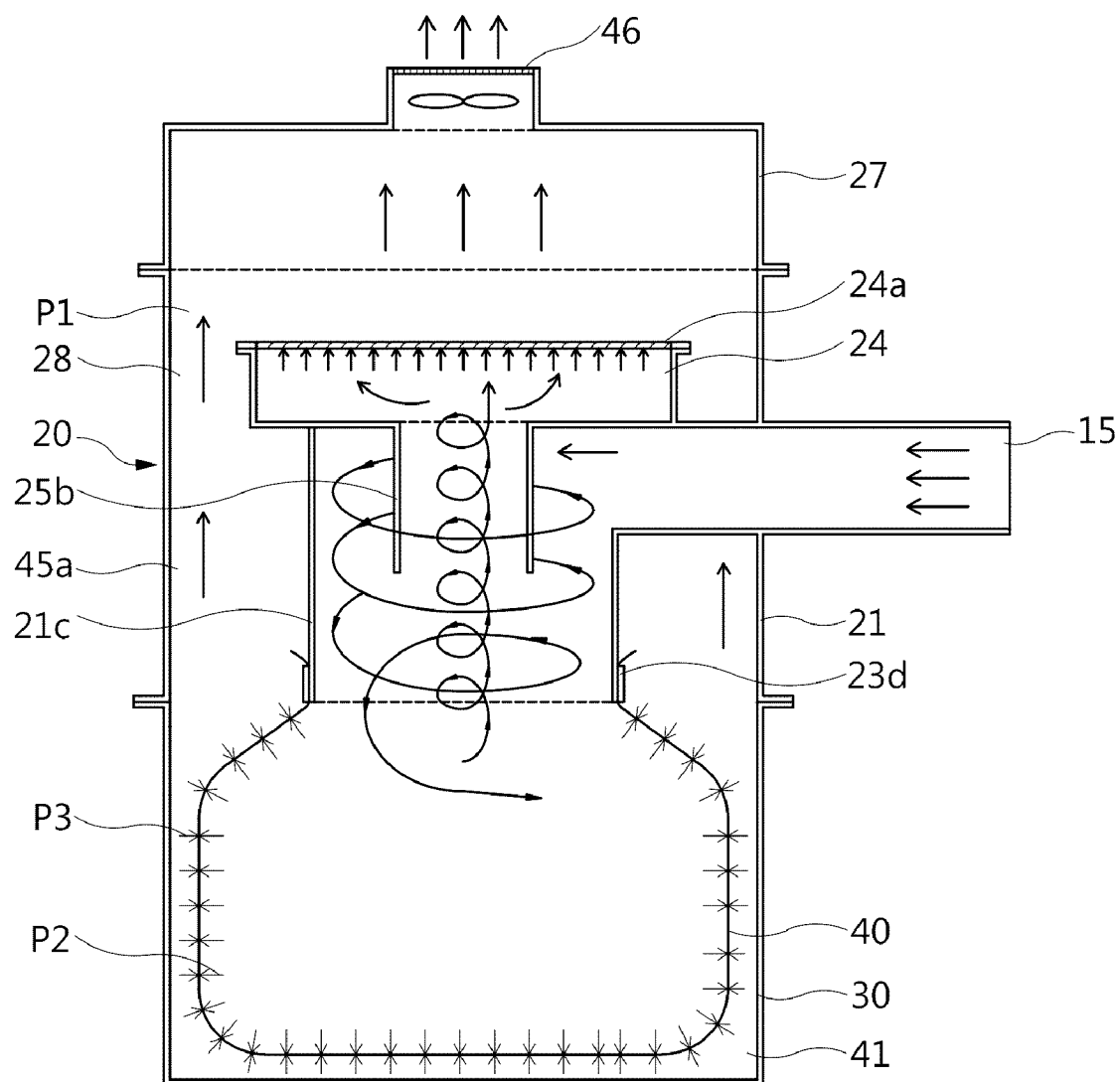


FIG. 28

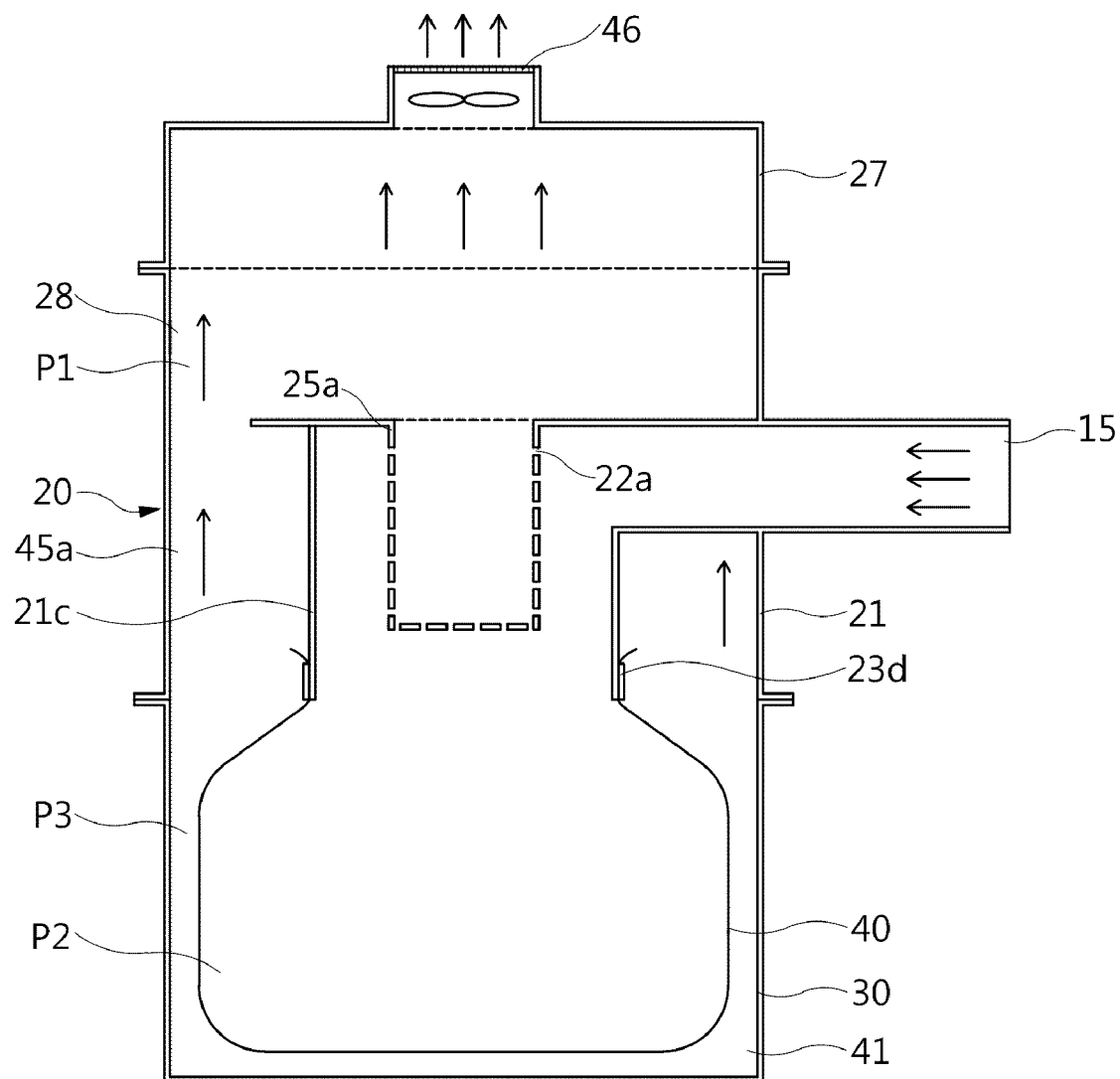


FIG. 29

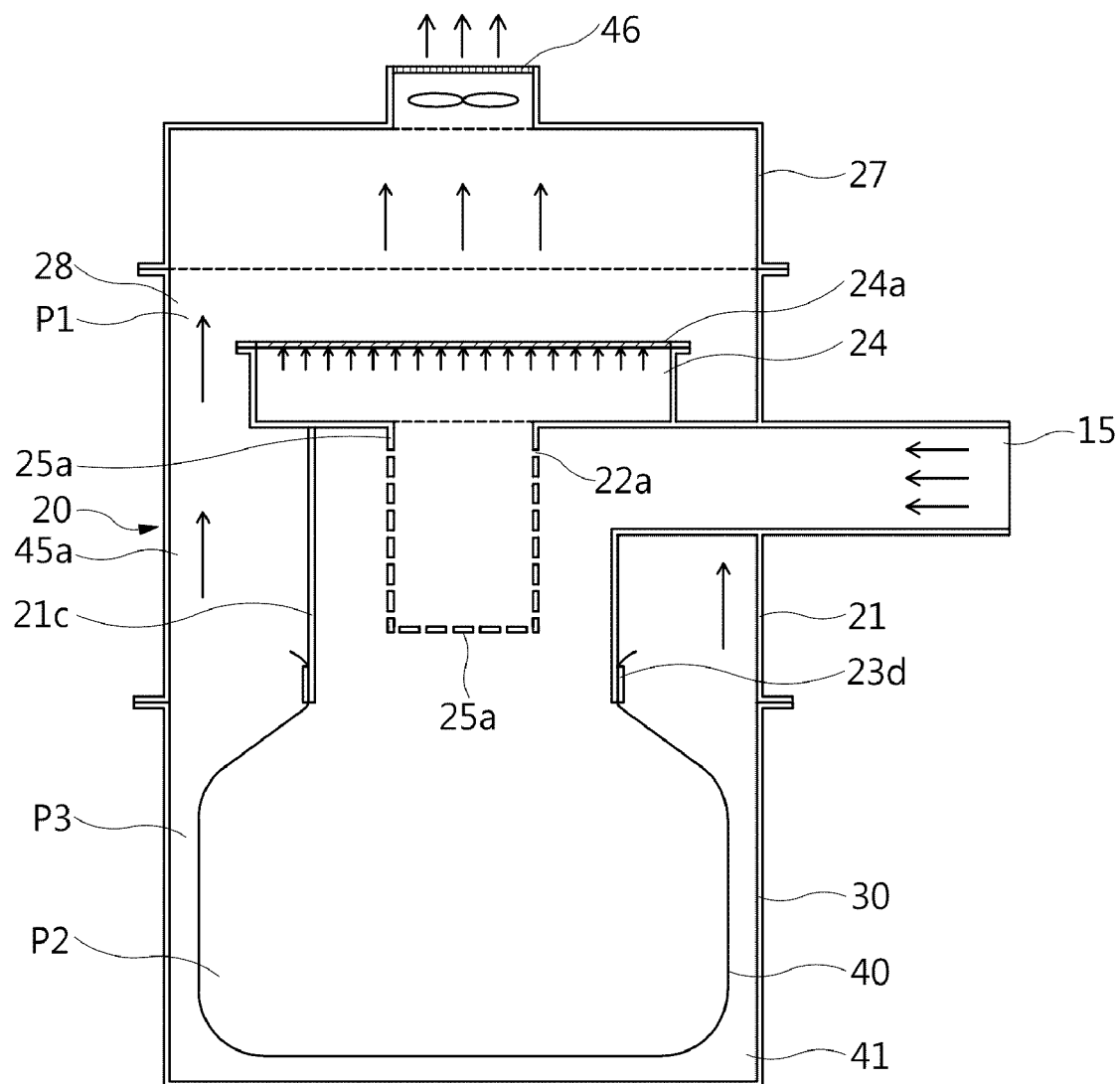


FIG. 30

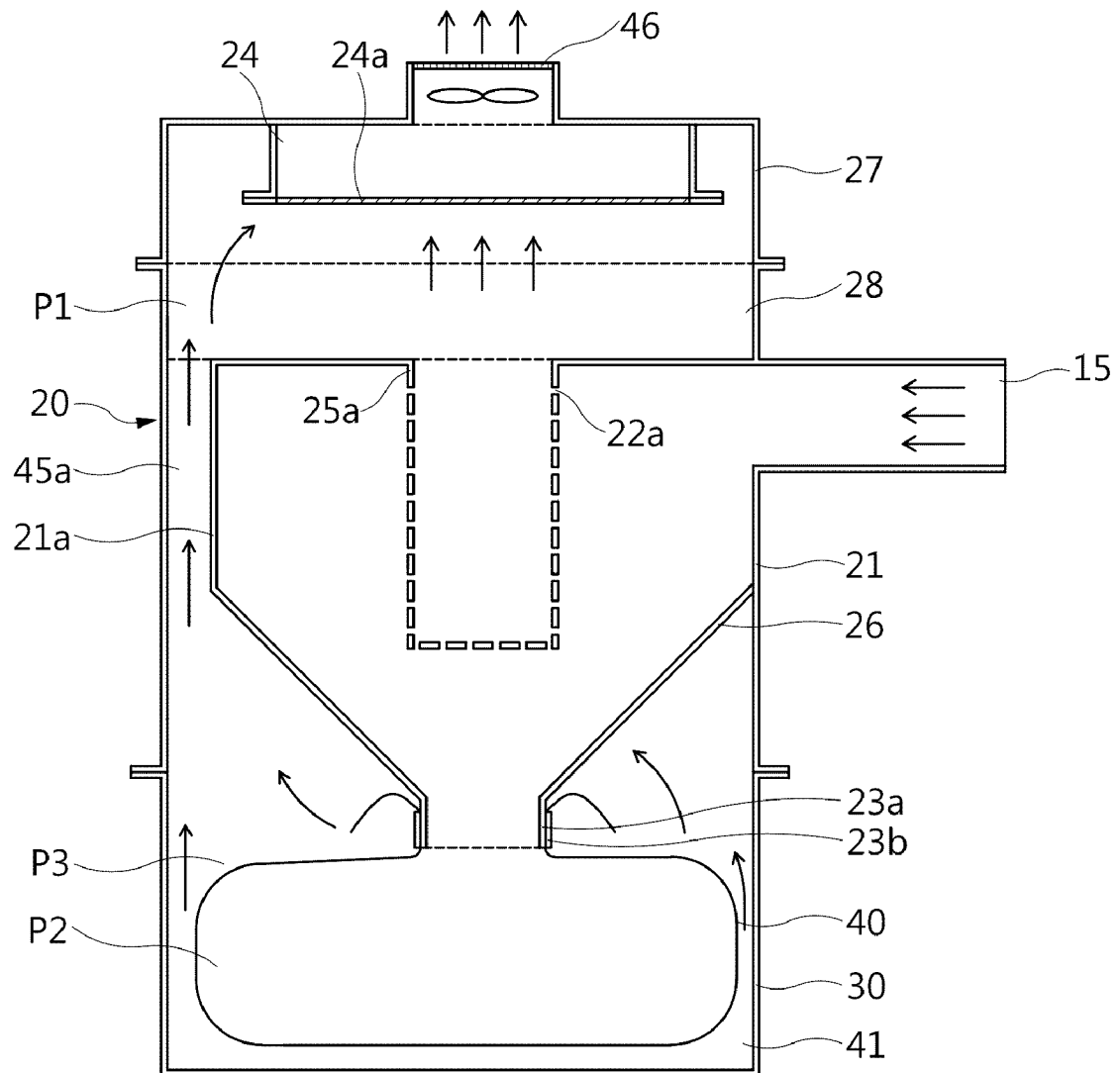


FIG. 31

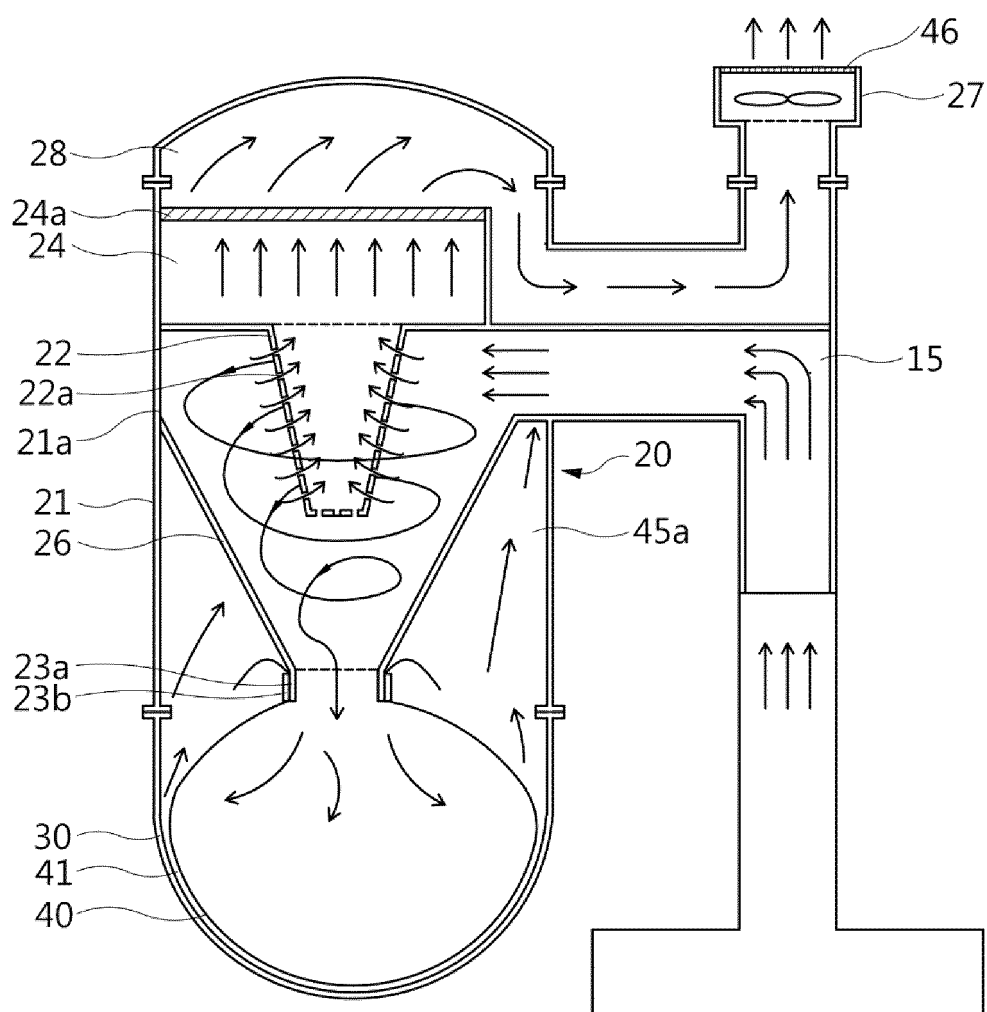
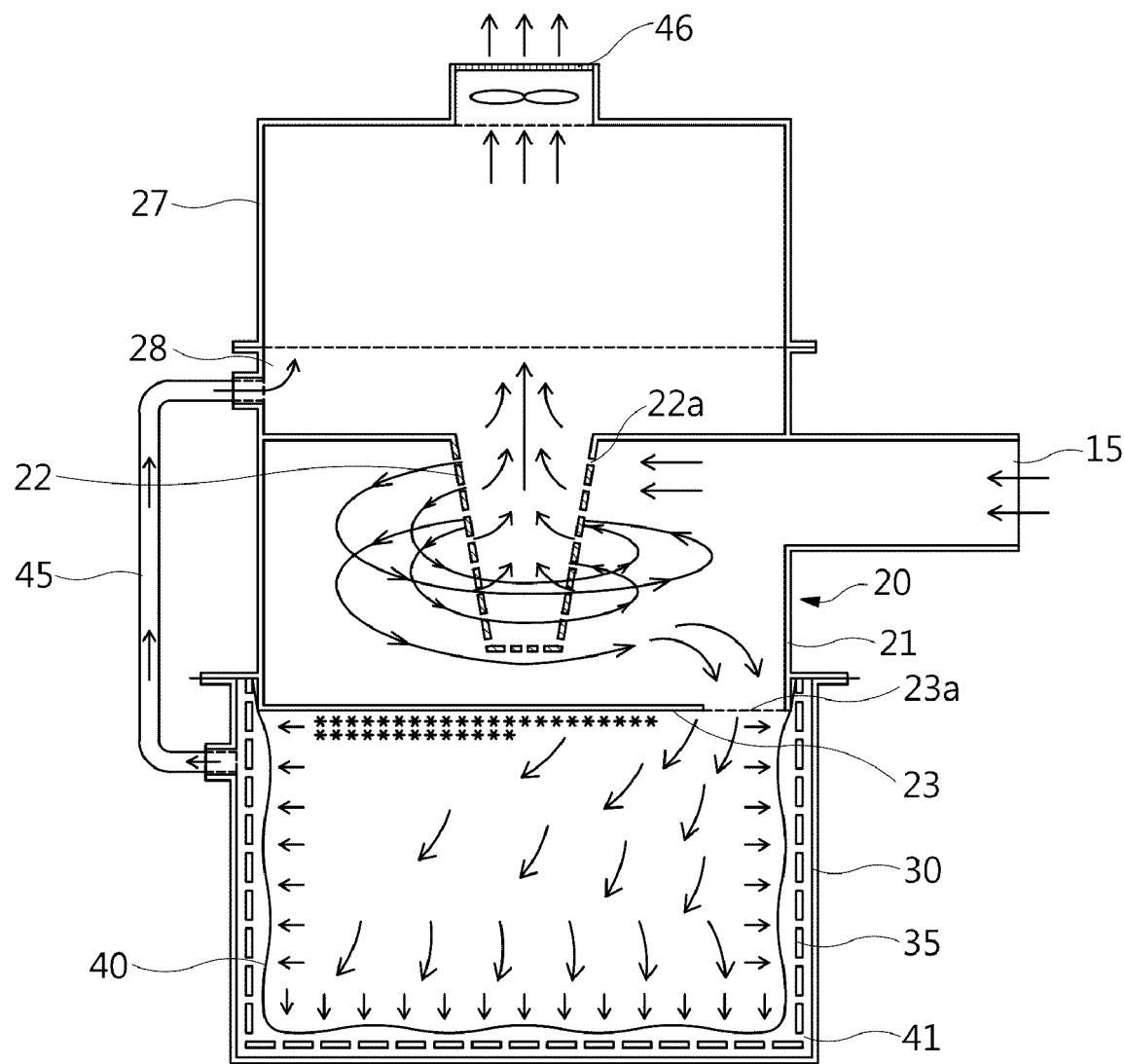


FIG. 32



INTERNATIONAL SEARCH REPORT

International application No.

PCT/KR2022/019888

A. CLASSIFICATION OF SUBJECT MATTER

A47L 9/14(2006.01)i; A47L 9/16(2006.01)i

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

A47L 9/14(2006.01); A47L 9/10(2006.01); A47L 9/12(2006.01); A47L 9/16(2006.01)

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Korean utility models and applications for utility models: IPC as above

Japanese utility models and applications for utility models: IPC as above

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

eKOMPASS (KIPO internal) & keywords: 봉지(bag), 봉투(envelope), 포집(collect), 쓰레기(garbage), 분리(separate), 노즐(nozzle), 고정(clamp), 원추(cone), 원통(cylinder), 가이드 베인(guide vane)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	KR 10-2372980 B1 (C&C SOLUTION) 11 March 2022 (2022-03-11) See paragraphs [0016]-[0017] and [0053]-[0064], claims 1, 3 and 5-6 and figures 2-8.	1-14
Y	JP 2009-201553 A (TOSHIBA CORP. et al.) 10 September 2009 (2009-09-10) See paragraphs [0021] and [0039]-[0054] and figures 2-5 and 10.	1-14
Y	KR 10-2007-0021523 A (LG ELECTRONICS INC.) 23 February 2007 (2007-02-23) See paragraphs [0050]-[0066] and figures 3-5.	9
A	KR 10-0577680 B1 (SAMSUNG GWANGJU ELECTRONICS CO., LTD.) 10 May 2006 (2006-05-10) See paragraphs [0023]-[0046] and figures 1-2.	1-14
A	KR 10-2002-0028498 A (LG ELECTRONICS INC.) 17 April 2002 (2002-04-17) See claim 1 and figure 2.	1-14

☐ Further documents are listed in the continuation of Box C.☒ See patent family annex.

* Special categories of cited documents:

“A” document defining the general state of the art which is not considered to be of particular relevance

“D” document cited by the applicant in the international application

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“P” document published prior to the international filing date but later than the priority date claimed

“T” later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

“X” document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

“Y” document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

“&” document member of the same patent family

Date of the actual completion of the international search

22 May 2023

Date of mailing of the international search report

22 May 2023

Name and mailing address of the ISA/KR

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INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.

PCT/KR2022/019888

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		RU 2308869 C2	27 October 2007
		US 2006-0230718 A1	19 October 2006
		US 7410517 B2	12 August 2008
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