

DESCRIPTION

TITLE OF INVENTION: STORAGE CONTAINER

TECHNICAL FIELD

[0001] The present invention relates to a storage container for storing storage items.

BACKGROUND ART

[0002] There are cases where an odor comes from the storage items when storage items are left unattended in a storage container for a long time. For example, when clothes or the like are left unattended in a laundry basket (or may be called a laundry cellar) for a long time, the clothes or the like generates odors. Therefore, there is a demand for technology for removing an odor generated from the storage items when storage items are left unattended for a long time.

Known in the related art is technology for removing odors generated from clothes or the like using discharge products such as ozone.

[0003] Patent Literature 1 proposes technology for removing odors generated from clothes or the like using discharge products such as ions. Patent Literature 1 discloses technology for performing deodorization or deodorizing treatment on clothes by ions in a drum type washing/drying machine by supplying, through an ion feeding air path, the ions generated from an ion generating device disposed above a water tub to an ion inlet formed so as to face and to be spaced apart from the ion feeding air path.

CITATION LIST

PATENT LITERATURE

[0004] Patent Literature 1: JP 2009-66054 A

SUMMARY OF INVENTION

TECHNICAL PROBLEM

[0005] Discharge products attenuate more as they travel more. Therefore, it is desirable to cause clothes or the like, from which odors are to be removed, to be brought into contact with discharge products immediately after generation of the discharge products.

However, in the technology disclosed in Patent Literature 1, the means for generating discharge products is disposed at a position away from the treatment tub. Therefore, according to the conventional technology as described in Patent Literature 1, the travel distance of the discharge products is long, and the discharge products and clothes or the like are not immediately brought into contact.

Meanwhile, in a case where the generation means is located near the water tub in the above technology, there is a possibility that the generation means comes into contact with water discharged from the water tub for storing water to be used for washing, and may deteriorate an electric discharge.

[0006] As a result, in the conventional technology as described in Patent Literature 1, there is a disadvantage that it is necessary to increase the travelling distance of the discharge products and that removal of odors of storage items by efficiently using the discharge products cannot be achieved.

[0007] The present invention has been made in order to solve the above-mentioned problem, and relates to a storage container capable of removing an odor of storage items by efficiently using discharge products.

SOLUTION TO PROBLEM

[0008] A storage container for storing a storage item according to the present invention includes: a first wall defining a storage space and formed with a first through-hole; and a discharge mechanism for generating a discharge product guided into the storage space via the first through-hole, the discharge mechanism disposed outside the first wall with a space therebetween, wherein, the discharge mechanism comprises: a ground electrode having a second through-hole that corresponds to the first through-hole; and a discharge electrode disposed at a position where the ground electrode is interposed between the first wall and the discharge electrode, and the discharge product is generated by an electric discharge between the ground electrode and the discharge electrode.

ADVANTAGEOUS EFFECTS OF INVENTION

[0009] According to the invention, a storage container can be provided which is capable of removing the odor of storage items by efficiently using discharge products.

BRIEF DESCRIPTION OF DRAWINGS

[0010] FIG. 1 is a diagram illustrating an example of the appearance of a laundry basket according to a first embodiment.

FIG. 2 is a diagram for explaining a discharge mechanism included in a deodorizing unit of the laundry basket according to the first embodiment, FIG. 2A is a perspective view of the laundry basket in a state where a storage unit is stored in the deodorizing unit, FIG. 2B is a diagram illustrating a part of a cross section taken along line A-A' of FIG. 2A, and FIG. 2C is a diagram illustrating a part of a cross section taken along line B-B' of FIGS. 2A and 2B. FIG. 2D is a diagram for explaining an example of gaps formed by an inner wall and support members in a deodorizing case.

FIG. 3 is a diagram for explaining an exemplary configuration of a humidity adjustment unit included in the laundry basket according to the first embodiment.

FIG. 4 is a flowchart for explaining the order of cooling operation by the humidity adjustment unit and discharging operation by the discharge mechanism when deodorization of clothes is performed in the laundry basket according to the first

embodiment.

FIG. 5 is a diagram for explaining an exemplary discharge mechanism in a case where wire electrodes illustrated in FIG. 2 are needle electrodes regarding the discharge mechanism included in the deodorizing unit of the laundry basket according to the first embodiment, FIG. 5A is a perspective view of the laundry basket in a state where a storage unit is stored in the deodorizing unit, FIG. 5B is a diagram illustrating a part of a cross section taken along line A-A' of FIG. 5A, and FIG. 5C is a diagram illustrating a part of a cross section taken along line B-B' of FIGS. 5A and 5B. FIG. 5D is a diagram for explaining an example of gaps formed by the inner walls and the support members in the deodorizing case.

FIG. 6 is a perspective view of the laundry basket in a case where the storage unit is donut-shaped in the first embodiment.

FIG. 7 is a diagram illustrating an example of a cross section of a handle including a discharge mechanism in the first embodiment.

FIG. 8 is a diagram illustrating an example of a cross-sectional view of the laundry basket in which the handle has a function of stirring the air in the storage space in the first embodiment.

FIG. 9 is a diagram for explaining an exemplary configuration of the laundry basket including a humidifying mechanism in the first embodiment.

DESCRIPTION OF EMBODIMENTS

[0011] To describe the invention further in detail, an embodiment for carrying out the invention will be described below with reference to the accompanying drawings.

First Embodiment

In a first embodiment below, it is assumed as an example that a storage

container is a “laundry basket” used in a house. A laundry basket is for storing dirty clothes or the like in daily life as storage items. In the first embodiment, clothes include cloth diapers and disposable diapers. In the following description, storage items such as dirty clothes to be stored in the laundry basket are simply referred to as “clothes”.

For example, a user stores clothes that need to be washed in the laundry basket for a certain period of time, and, when washing, moves the clothes stored in the laundry basket to a treatment tub of a washing machine for washing.

The laundry basket according to the first embodiment is capable of removing odors adhered to clothes before washing or removing odors generated by leaving clothes unattended.

[0012] FIG. 1 is a diagram illustrating an example of the appearance of a laundry basket 1 according to the first embodiment. Note that FIG. 1 is a perspective view of the laundry basket 1.

As illustrated in FIG. 1, the laundry basket 1 includes a deodorizing unit 10, a storage unit 20, and a humidity adjustment unit 30. The laundry basket 1 has, for example, a substantially elliptical shape in a plan view, as illustrated in FIG. 1. Specifically, the deodorizing unit 10 and the storage unit 20 of the laundry basket 1 both have, for example, a substantially elliptical shape in the plan view.

[0013] The storage unit 20 is attachably and detachably installed inside the deodorizing unit 10. Specifically, the storage unit 20 is attachably and detachably installed in a space for accommodating the storage unit 20 inside the deodorizing unit 10 (hereinafter, referred to as the “accommodating space”). Note that FIG. 1 is a perspective view illustrating a state in which the storage unit 20 is detached from the deodorizing unit 10.

The storage unit 20 includes a storage case 201 and a handle 202.

A wall 2010 (first wall) of the storage case 201 defines a space for storing clothes (not illustrated) therein (hereinafter, referred to as the “storage space”) and has a meshed structure.

The size of a mesh hole of the wall 2010 of the storage case 201 is set so as to pass, at least, air containing discharge products or water vapor while the laundry basket 1 is operating, but not to pass clothes, fingers of children, or the like: such as 5 mm square. The discharge product will be described later.

Note that, in the first embodiment, the mesh of the wall 2010 of the storage case 201 is also referred to as “first through-holes” (denoted by 2011 in FIG. 1).

The storage case 201 has an opening (first opening 20a) on the top surface, and the user can put and take clothes in and out of the storage space through the opening.

The storage case 201 includes any appropriate members. The storage case 201 may be made of, for example, resin or metal. When resin is used as the material of the storage case 201, a lightweight and inexpensive storage case 201 can be manufactured. Meanwhile, in a case where metal is used as the material of the storage case 201, a storage case 201 that is not unlikely to be deteriorated by the discharge products can be manufactured.

[0014] The handle 202 is provided inside the storage space.

For example, as illustrated in FIG. 1, the handle 202 includes two rod-shaped members one end of which connected to the bottom surface of the storage case 201 by screws or the like, and a catch portion 202a, for a user to catch by hand, provided at the other ends of the two rod-shaped members. Forming the shape of the handle 202 as illustrated in FIG. 1 allows the handle 202 be to less likely to break and to have no rod-shaped members in the center of the catch portion 202a of the handle 202, thereby

making it easier for the user to hold as compared to a case where the handle 202 has a T-shape or the like. Furthermore, since there are two rod-shaped members inside the storage case 201, the clothes stored in the storage case 201 are less likely to be entangled.

The user can remove the storage unit 20 from the deodorizing unit 10 by lifting the storage case 201 by holding the catch portion 202a of the handle 202, and carry the storage unit 20 alone. Specifically, when washing, for example the user removes the storage unit 20 from the deodorizing unit 10, carries the storage unit 20 to the installation location of a washing machine, moves the clothes stored in the storage unit 20 to the treatment tub of the washing machine, and washes the clothes by the washing machine.

Note that the shape of the handle 202 is not limited to the shape illustrated in FIG. 1, and may be, for example, a T-shape. The handle 202 may have a desired shape as long as the handle 202 is connected to the storage unit 20 and has a shape that allows a user to lift the storage case 201 by holding the handle 202 by grabbing or catching the handle 202 with a hand.

Also, in FIG. 1, the handle 202 is positioned by being connected to the bottom surface of the storage case 201 as an example; however, this is merely an example, and the handle 202 may be connected to the wall 2010 of the storage case 201. The handle 202 can be provided at a desired position as long as a user can lift the storage case 201 by holding the handle 202.

[0015] The deodorizing unit 10 includes a deodorizing case 101 and a lid 102.

A wall 1010 (second wall) of the deodorizing case 101 defines a space for accommodating the storage case 201 therein (hereinafter, referred to as the “accommodating space”).

The deodorizing case 101 has an opening (second opening 10a) on the top surface, and attachably and detachably stores the storage case 201 in the storage space through the opening.

It is assumed that the height of the opening of the deodorizing case 101 from the ground in the vertical direction and the height of the opening of the storage case 201 from the ground in the vertical direction are substantially the same in a state where the storage case 201 is stored in the deodorizing case 101 and the laundry basket 1 is installed on a ground such a floor (see FIG. 2 described later). The laundry basket 1 has a structure that allows the discharge product generated in the deodorizing case 101 to be transported to the clothes stored in the storage space through the opening of the deodorizing case 101 and the opening of the storage case 201 via the shortest route, with the deodorizing case 101 and the storage case 201 having substantially the same height in the vertical direction from the ground in a state where the storage case 201 is stored and installed in the deodorizing case 101.

The deodorizing case 101 includes a discharge mechanism 11 inside the wall 1010 on the accommodating space side. Details of the discharge mechanism 11 will be described later.

In the first embodiment, “inside (of) the wall” refers to a portion between the inner surface and the outer surface of the wall. Furthermore, “outside (of) the wall” refers to a portion other than the “inside (of) the wall”.

[0016] The lid 102 is rotatably provided to the deodorizing case 101, and opens and closes the opening of the deodorizing case 101.

The laundry basket 1 includes also an interlock device (not illustrated), and the lid 102 is locked or unlocked by the interlock device under a preset condition.

Note that the lid 102 has a plate-like shape in the laundry basket 1 illustrated in

FIG. 1; however, the shape of the lid 102 is not limited thereto, and the lid 102 is only required to have a shape that can close the opening of the deodorizing case 101.

[0017] The humidity adjustment unit 30 is included on a bottom wall 101d of the deodorizing case 101 (described later with reference to FIG. 2).

The humidity adjustment unit 30 is included in order to improve the effect of deodorization of clothes in the storage space. The specific configuration of the humidity adjustment unit 30 will be described later.

[0018] Although not illustrated in FIG. 1, the laundry basket 1 is connected with a power supply cord having a plug at the end, and power is supplied to the laundry basket 1 when the plug is connected to an outlet. Note that the outlet is, for example, an outlet installed in a house, and power from a commercial power supply (hereinafter, simply referred to as “power supply”) is supplied to the outlet.

Instead of supplying power to the laundry basket 1 via the power supply cord, the laundry basket 1 may include a battery therein, and power may be supplied from the battery. With power supplied from the battery, the user can have the laundry basket 1 operate even in a case where the laundry basket 1 is installed in a place where there is no commercial power supply or a place where the commercial power source is installed is far from the place where the laundry basket 1 is installed.

In addition, although not illustrated in FIG. 1, the laundry basket 1 includes a control unit for controlling the operation of each component included in the laundry basket 1.

The control unit includes, for example, a lid control unit, a humidity adjustment control unit, and a discharge control unit.

The lid control unit controls the locking operation or the unlocking operation of the lid 102. The humidity adjustment control unit controls the operation of the

humidity adjustment unit 30. The discharge control unit controls the operation of the discharge mechanism 11.

The operation by the control unit is executed by program processing using a central processing unit (CPU) based on software.

Each control operation by the control unit will be described later.

[0019] FIG. 2 is a diagram for explaining a discharge mechanism included in the deodorizing unit 10 of the laundry basket 1 according to the first embodiment. FIG. 2A is a perspective view of the laundry basket 1 in a state where the storage unit 20 is stored in the deodorizing unit 10, FIG. 2B is a diagram illustrating a part of a cross section taken along line A-A' of FIG. 2A, and FIG. 2C is a diagram illustrating a part of a cross section taken along line B-B' of FIGS. 2A and 2B. FIG. 2D is a diagram for explaining an example of gaps formed by an inner wall 101a (described later) and support members 1013 (described later) in the deodorizing case 101.

[0020] As illustrated in FIG. 2B, the deodorizing case 101 includes the inner wall 101a, an outer wall 101b, an upper wall 101c, and a bottom wall 101d. The inner wall 101a is a wall of the deodorizing case 101 on the accommodating space side, and the outer wall 101b is a wall of the deodorizing case 101 on the side opposite to the accommodating space. Hereinafter, the inner wall 101a and the outer wall 101b are collectively referred to simply as the “walls 1010”.

[0021] The deodorizing case 101 is attached with wire mesh 1011 and wire electrodes 1012.

The wire mesh 1011 is attached to the inner wall 101a of the deodorizing case 101 over the entire surface on the accommodating space side. In the first embodiment, the mesh holes of the wire mesh 1011 are also referred to as “second through-holes” (denoted by 10111 in FIG. 2).

[0022] The wire electrodes 1012 are included in the deodorizing case 101 on the opposite side of the accommodating space with respect to the wire mesh 1011. In the first embodiment, as illustrated in FIG. 2, the wire electrodes 1012 are included inside the inner wall 101a of the deodorizing case 101.

The wire electrodes 1012 are stretched along the inner wall 101a of the deodorizing case 101 so as to go around the inner wall 101a, and to form a plurality of layers in the vertical direction of the inner wall 101a of the deodorizing case 101. Note that the wire electrodes 1012 are included so as to form the plurality of layers in the first embodiment; however, this is merely an example, and the wire electrodes 1012 may be attached so as to go around the inner wall 101a of the deodorizing case 101 and to form a single layer.

[0023] The wire electrodes 1012 are supported by the support members 1013, and are positioned in the height direction in the deodorizing case 101.

[0024] A support member 1013 is molded from, for example, resin, and is formed so as to be sandwiched by the inner wall 101a of the deodorizing case 101 at one end thereof on the upper side and the other end thereof on the lower side.

In the first embodiment, it is assumed that the support members 1013 and the inner wall 101a are integrally molded from resin. However, this is merely an example, and the support members 1013 and the inner wall 101a may be separately molded and connected by an appropriate method.

[0025] A support member 1013 has a support hole 1013a for supporting a wire electrode 1012.

The width of a support member 1013 in a direction parallel to the direction in which a wire electrode 1012 supported by the support member 1013 extends may be a desired length. Note that a support member 1013 is not included over the entire

circumference of the inner wall 101a, but a gap through which air passes (hereinafter, referred to as the “third through-hole” (denoted by 10112 in FIG. 2)) is formed between the inner wall 101a connected with the upper side of the support member 1013 and the inner wall 101a connected with the lower side of the support member 1013 (see FIGS. 2C and 2D).

Note that there needs to be an appropriate number of third through-holes 10112 having an appropriate size so as not to interrupt the flow of air.

[0026] The wire mesh 1011 functions as a ground electrode, and the wire electrodes 1012 function as discharge electrodes. The wire mesh 1011 and the wire electrodes 1012 are included in the discharge mechanism 11.

The laundry basket 1 includes a power receiving unit (not illustrated) that receives power from a power source via the power supply cord and a power line (not illustrated) or the like included inside the laundry basket 1. An electric discharge is performed between the wire mesh 1011 and the wire electrodes 1012 by the power received by the power receiving unit, and discharge products such as ions or ozone gas are generated in the air. Since the electric discharge is existing general technology, detailed description is omitted.

Specifically, the discharge operation by the discharge mechanism 11 is controlled by the discharge control unit.

The specific control operation on the discharge mechanism 11 by the discharge control unit will be described later.

[0027] The wire mesh 1011 and the wire electrodes 1012 are arranged so that the wire mesh 1011 is attached to the storage space side of the storage case 201, and the wire electrodes 1012 are attached on the side opposite to the storage space with respect to the wire mesh 1011.

That is, the wall 2010, the wire mesh 1011, and the wire electrodes 1012 are arranged at positions where the wire mesh 1011 is interposed between the wall 2010 of the storage case 201 and the wire electrodes 1012.

In addition, the first through-holes 2011, the second through-holes 10111, and the third through-holes 10112 are arranged in the order of the first through-holes 2011, the second through-holes 10111, and the third through-holes 10112 as viewed from the storage space.

The discharge products generated by the discharge mechanism 11 travels together with air, pass through the third through-holes 10112, pass through the second through-holes 10111, further pass through the first through-holes 2011, and reach inside the storage space of the storage case 201.

[0028] As illustrated in FIG. 1, the deodorizing case 101 has a space between the inner wall 101a and the outer wall 101b, and a blowing unit is included in the space. In the first embodiment, the blowing unit is, for example, a fan 1014. Note that illustration of the fan 1014 is omitted in FIG. 2C.

It is sufficient to include at least one fan 1014 at an appropriate position in the space between the inner wall 101a and the outer wall 101b.

The fan 1014 is attached to the deodorizing case 101 by an appropriate method.

The fan 1014 is connected with a motor (not illustrated), and driving the motor causes the fan 1014 to be driven to blow air toward the accommodating space.

[0029] When the fan 1014 is driven, the air sent from the fan 1014 passes through the third through-holes 10112 and the second through-holes 10111 together with the discharge products generated by the discharge mechanism 11 and is sent to the storage case 201.

The air and the discharge products sent to the storage case 201 pass through the

first through-holes 2011 and are sent into the storage space of the storage case 201.

In this manner, the discharge products generated by the discharge mechanism 11 are guided into the storage space through the first through-holes 2011, and odor substances, microorganisms, or viruses in the clothes stored in the storage space of the storage case 201 come into contact with the discharge products.

As a result, oxidization or neutralization by the discharge products occurs, and the odor substances in the clothes are deodorized.

Moreover, with the oxidization by the discharge products, the microorganisms or viruses in clothes are sterilized.

In addition, due to the oxidization by the discharge products, the surface of dirt adhered to the clothes is hydrophilized, and it becomes easier for the dirt to be dissolved in water and to be removed when washed in the washing machine later.

Furthermore, since the laundry basket 1 includes the fan 1014, and the fan 1014 blows air toward the accommodating space, the clothes in the storage space and the discharge products can be efficiently brought into contact in a state where the storage unit 20 is stored in the deodorizing unit 10, thereby enabling enhancement of the deodorizing effect of the clothes.

[0030] As described above, in the laundry basket 1 according to the first embodiment, the storage space and the discharge mechanism 11 are positioned close to each other, and the laundry basket 1 is capable of performing deodorization of the clothes by causing the discharge products generated by the discharge mechanism 11 to be quickly brought into contact with clothes in the storage space.

The laundry basket 1 includes the wire mesh 1011 between the deodorizing case 101 and the storage case 201, and thus a current generated in the deodorizing case 101 is not transmitted to the storage case 201, thereby enabling prevention of leakage of

electricity from the deodorizing case 101 to the storage case 201. The material of the storage case 201 can be any appropriate material.

The storage case 201 has a function as a case for storing clothes by having a mesh shape, and a function as the first through-holes 2011 for passing the discharge products sent from the deodorizing unit 10.

[0031] The configuration of the humidity adjustment unit 30 (see FIG. 1) will be described.

The humidity adjustment unit 30 is included in order to improve the effects of deodorization or sterilization of the clothes in the storage case 201 or to improve the effect of dissolving dirt.

The humidity adjustment unit 30 is, for example, a cooling unit using a Peltier element.

Here, FIG. 3 is a diagram for explaining an exemplary configuration of the humidity adjustment unit 30 included in the laundry basket 1 according to the first embodiment.

In the humidity adjustment unit 30, a pair of Peltier circuit boards 301, in each of which a circuit is formed on one side of an insulating plate made of, for example, alumina or aluminum nitride having high thermal conductivity, is arranged so that the circuits face each other. In addition, in the humidity adjustment unit 30, a large number of BiTe-based Peltier elements 302 arranged in line are clamped between the two Peltier circuit boards 301 and Peltier elements 302 adjacent to each other are electrically connected by the circuits on the both sides. Moreover, heat is transferred from one of the Peltier circuit boards 301 to the other Peltier circuit board 301 by electric conduction to the Peltier elements 302 via a Peltier input lead wire (not illustrated).

As described above, the humidity adjustment unit 30 performs cooling operation by an existing general cooling method using, for example, Peltier elements.

Note that the Peltier input lead wire is connected with, for example, the power line included inside the laundry basket 1.

The humidity adjustment unit 30 operates by power from a power source that is received by the power receiving unit.

The operation of the humidity adjustment unit 30 is controlled by the humidity adjustment control unit.

The specific control operation on the humidity adjustment unit 30 by the humidity adjustment control unit will be described later.

[0032] Next, various types of control operation by the control unit in the laundry basket 1 according to the first embodiment will be described.

First, the opening and closing control of the lid 102 by the lid control unit in the laundry basket 1 will be described with a specific example.

Having received a lid unlocking instruction, the lid control unit unlocks the lid 102.

Specifically, for example, a user turns on the power of the laundry basket 1 and presses an “open” button provided on the lid 102 or the deodorizing case 101 to input the lid unlocking instruction. Alternatively, for example, the user may operate a remote controller or the like to input the lid unlocking instruction. In this case, a communication unit (not illustrated) included in the laundry basket 1 receives the lid unlocking instruction transmitted from the remote controller.

The lid control unit receives the lid unlocking instruction, and unlocks the lid 102. When the lid 102 is unlocked, the lid 102 enters a state where the lid 102 can be opened or closed.

Conversely, when a lid locking instruction is received, the lid control unit locks the lid 102.

Specifically, for example, the user presses a “close” button provided on the lid 102 or the deodorizing case 101 to input the lid locking instruction. Alternatively, for example, the user may operate a remote controller or the like to input the lid locking instruction.

The lid control unit receives the lid locking instruction, and locks the lid 102. [0033] Furthermore, the lid control unit causes the interlock device to lock or unlock the lid 102 under a preset condition.

For example in a state where the above-mentioned discharge products contain ozone gas, the lid control unit controls the lid 102 on the basis of the ozone gas concentration in the storage space as follows.

First, the lid control unit acquires information of the ozone concentration in the storage space and information of the discharge voltage in the discharge mechanism 11 from an ozone gas concentration sensor (not illustrated) and a discharge voltage measuring unit (not illustrated), respectively. Note that the ozone gas concentration sensor and the discharge voltage measuring unit are provided at appropriate locations in the laundry basket 1.

In a case where the ozone gas concentration in the storage space is greater than 0.05 ppm or the discharge voltage in the discharge mechanism 11 is greater than 0 kV, the lid control unit causes the interlock device to lock the lid 102 and disables opening or closing of the lid 102.

Alternatively, in a case where the ozone gas concentration in the storage space is less than or equal to 0.05 ppm and the discharge voltage in the discharge mechanism 11 is 0 kV, the lid control unit causes the interlock device to unlock the lid 102 and

enables opening and closing of the lid 102.

Note that the level of the ozone gas concentration of less than or equal to 0.05 ppm is the global room environmental standard. The U.S. Food and Drug Administration (FDA) has specified a maximum allowable concentration for the room environmental standard of 0.05 ppm (24 hr) (1992). In addition, the Japan Air Cleaning Association has set an allowable concentration of indoor gas from a device that generates ozone (design standard, provisional) of 0.1 ppm at maximum and 0.05 ppm on average.

Ozone gas has a high deodorizing effect, but has a significant effect on human body.

If the lid 102 is opened in a state where ozone gas of a high concentration is spread within the storage space, the ozone gas leaks from the storage space to the outside of the laundry basket 1, thereby affecting human body.

As described above, the lid control unit controls to enable opening and closing of the lid 102 in a case where the ozone gas concentration is less than or equal to 0.05 ppm and the discharge voltage is 0 kV, and thus leakage of the ozone gas to the outside of the laundry basket 1 can be prevented.

[0034] Next, control operation on the discharge mechanism 11 by the discharge control unit in the laundry basket 1 will be described with a specific example.

For example, a user turns on the power of the laundry basket 1, opens the lid 102, and puts clothes to be deodorized into the storage space. Then, after elapse of a certain period of time, the user deodorizes the clothes stored and left unattended in the storage space.

The user turns on the power of the laundry basket 1 and inputs a deodorization start instruction. For example, the user presses a “deodorization start” button provided

on the lid 102 or the outer wall 101b of the deodorizing case 101 or the like to input the deodorization start instruction. Alternatively, for example, the user may operate a remote controller or the like to input the deodorization start instruction. In this case, a communication unit (not illustrated) included in the laundry basket 1 receives the deodorization start instruction transmitted from the remote controller.

The discharge control unit receives the deodorization start instruction, controls so that the applied voltage is supplied to the discharge mechanism 11, and causes the discharge mechanism 11 to operate. As a result, discharge products are generated from the discharge mechanism 11, and the generated discharge products are sent into the storage space together with air, thereby deodorizing the clothes.

[0035] The discharge control unit can also cause the discharge mechanism 11 to operate while controlling the concentration of generated discharge products.

For example when the discharge mechanism 11 generates ozone gas, the discharge control unit can control the discharge mechanism 11 to generate ozone gas the concentration of which is less than or equal to 0.05 ppm.

The ozone gas not only has a significant effect on human body as described above, but also may damage clothes if high-concentration ozone gas comes into contact with clothes.

Therefore, the discharge control unit controls the concentration of the ozone gas generated by the discharge mechanism 11 to be less than or equal to 0.05 ppm.

Specifically, the discharge control unit obtains information of the ozone concentration in the storage space from the ozone gas concentration sensor, and if the concentration is greater than or equal to 0.05 ppm, the discharge control unit causes the discharge mechanism 11 to reduce the applied voltage.

The discharge mechanism 11 can change the concentration of generated ozone

gas depending on the change in the supplied applied voltage and the frequency.

[0036] In the laundry basket 1 according to the first embodiment, the discharge mechanism 11 can generate ozone gas and a negative ion as discharge products.

For example, even if the discharge control unit controls the ozone gas concentration to less than or equal to 0.05 ppm as described above, the laundry basket 1 can perform deodorization with reduced damage of clothes with a low ozone gas concentration by performing deodorization with ozone gas and a negative ion.

[0037] Note that the discharge control unit notifies the lid control unit that an electric discharge is being performed when the discharge mechanism 11 is operated as described above.

Having received the notification from the discharge control unit that the electric discharge is being performed, the lid control unit causes the interlock device to lock the lid 102.

This can prevent the user from opening the lid 102 during the electric discharge and the discharge products generated in the deodorizing case 101 and spread within the storage space from being emitted from the storage space to the outside of the laundry basket 1.

[0038] Next, control operation of the humidity adjustment control unit on the humidity adjustment unit 30 in the laundry basket 1 will be described with a specific example.

For example, when a user desires to deodorize clothes, the user turns on the power of the laundry basket 1 and inputs a deodorization start instruction as described above. The method of inputting the deodorization start instruction by a user has already been described by way of an example, and thus a duplicate description will be omitted.

The humidity adjustment control unit receives the deodorization start

instruction, controls so that power is supplied to the humidity adjustment unit 30, and causes the humidity adjustment unit 30 to operate.

The humidity adjustment unit 30 lowers the temperature in the storage space on the basis of control by the humidity adjustment control unit.

[0039] When the humidity adjustment unit 30 lowers the temperature in the storage space, the amount of saturated steam in the storage space decreases. As a result, the relative humidity in the storage space increases.

The humidity adjustment unit 30 adjusts the relative humidity in the storage space by lowering the temperature in the storage space as needed.

When the fan 1014 is driven in a state where clothes are stored in the storage space and air is sent into the storage space, the air sent from the fan 1014 evaporates moisture in the clothes, and the absolute humidity in the storage space increases.

When the temperature in the storage space is reduced in such a situation, the relative humidity in the storage space tends to increase as compared to the relative humidity in the storage space at a normal temperature.

[0040] When the relative humidity in the storage space increases, the number of water molecules in the air increases, and the concentration of the water ion containing OH radicals, as the discharge products, rises. As a result, the oxidizability of the discharge products increases. As a result, the deodorizing effect and the sterilizing effect of the discharge products are improved by lowering the temperature and increasing the relative humidity as compared to the case where deodorization and sterilization are performed at a normal temperature.

In addition, when the relative humidity rises, the oxidizability by the discharge products is improved and the effect of decomposing dirt is improved as compared with the case where dirt is decomposed at a normal temperature. In addition, when the

relative humidity rises, evaporation of moisture from the dirt adhered to the clothes is suppressed, and thus solidification of the dirt adhered to the clothes becomes unlikely, thereby facilitating the dirt to be removed when the clothes are washed in a washing machine later.

In addition, by lowering the temperature in the storage space, the growth of microorganisms in the storage space is suppressed, thereby improving the sterilizing effect.

[0041] When the relative humidity in the storage space becomes greater than or equal to 60%, the deodorizing effect in the storage space is enhanced.

Therefore, the humidity adjustment control unit controls the humidity adjustment unit 30 to lower the temperature in the storage space until the relative humidity in the storage space becomes greater than or equal to 60%.

The humidity adjustment control unit is only required to acquire information of the relative humidity in the storage space, for example, from a humidity sensor (not illustrated) provided at an appropriate place in the storage case 201 and to control the humidity adjustment unit 30 on the basis of the acquired information of the relative humidity.

The humidity adjustment unit 30 adjusts the relative humidity in the storage space to greater than or equal to 60% on the basis of the control by the humidity adjustment control unit.

[0042] In addition, when the relative humidity in the storage space becomes 80%, the deodorizing effect in the storage space is further enhanced, and thus it is more desirable that the humidity adjustment control unit controls the humidity adjustment unit 30 to lower the temperature in the storage space until the relative humidity in the storage case 201 becomes greater than or equal to 80%.

The humidity adjustment unit 30 adjusts the relative humidity in the storage space to greater than or equal to 80% on the basis of the control by the humidity adjustment control unit.

[0043] As described above, the discharge control unit and the humidity adjustment control unit control the discharge operation of the discharge mechanism 11 and the cooling operation of the humidity adjustment unit 30, respectively, on the basis of the deodorization start instruction. At this point, the discharge control unit and the humidity adjustment control unit control the humidity adjustment unit 30 and the discharge mechanism 11 so that the electric discharge by the discharge mechanism 11 is started to generate discharge products after the humidity adjustment by the humidity adjustment unit 30 is performed and the relative humidity reaches a predetermined state. Details will be described below.

[0044] FIG. 4 is a flowchart for explaining the order of cooling operation by the humidity adjustment unit 30 and discharging operation by the discharge mechanism 11 when deodorization of clothes is performed in the laundry basket 1 according to the first embodiment.

When a user turns on the power of the laundry basket 1 and inputs a deodorization start instruction, the humidity adjustment control unit and the discharge control unit receive the deodorization start instruction (step ST401).

When the deodorization start instruction is received in step ST401, first, the humidity adjustment control unit controls the humidity adjustment unit 30 to lower the temperature in the storage space, and the humidity adjustment unit 30 cools the inside of the storage space (step ST402).

The humidity adjustment control unit determines whether the relative humidity in the storage space has reached a target relative humidity (step ST403). The target

relative humidity is a relative humidity at which the deodorizing effect in the storage space is enhanced as described above, which is greater than or equal to 60%, or more preferably, greater than or equal to 80%. The target relative humidity is set in advance. In this example, it is assumed that the target relative humidity is set to greater than or equal to 80%.

[0045] If the humidity adjustment control unit determines that the relative humidity in the storage space is not greater than or equal to 80% ("NO" in step ST403), the process returns to step ST402.

[0046] On the other hand, if the humidity adjustment control unit determines that the relative humidity in the storage space is greater than or equal to 80% ("YES" in step ST403), the humidity adjustment control unit notifies the discharge control unit that the relative humidity is greater than or equal to 80%.

[0047] When notified from the humidity adjustment control unit that the relative humidity in the storage space is greater than or equal to 80%, the discharge control unit controls so that discharge products are generated (step ST404). Specifically, the discharge control unit causes the discharge mechanism 11 to start an electric discharge to generate discharge products.

Note that, also after it is determined that the relative humidity in the storage space is greater than or equal to 80% in step ST403, the humidity adjustment control unit keeps controlling the humidity adjustment unit 30 to maintain the relative humidity in the storage space at greater than or equal to 80% while the discharge mechanism 11 is performing the electric discharge in step ST404.

Furthermore, in step ST404, the discharge control unit controls the discharge mechanism 11 and notifies the lid control unit that the electric discharge is being performed. The lid control unit causes the interlock device to lock the lid 102.

[0048] The humidity adjustment control unit and the discharge control unit determine whether a deodorization end instruction has been received (step ST405).

For example, the user inputs the deodorization end instruction by pressing a “deodorization end” button provided on the lid 102 or the outer wall 101b of the deodorizing case 101. Alternatively, for example, the user may operate a remote controller or the like to input the deodorization end instruction.

The humidity adjustment control unit and the discharge control unit receive the deodorization end instruction input by the user.

[0049] In step ST405, if the humidity adjustment control unit and the discharge control unit have not received any deodorization end instruction (“NO” in step ST405), the process returns to step ST404.

[0050] On the other hand, in step ST405, if the deodorization end instruction (“YES” in step ST405) is received, the humidity adjustment control unit and the discharge control unit control the humidity adjustment unit 30 to stop adjusting the humidity and the discharge mechanism 11 to stop generating discharge products, respectively (step ST406).

As a result, the deodorizing operation in the laundry basket 1 stops.

[0051] In this manner, the discharge control unit controls the discharge mechanism 11 to generate discharge products after the humidity adjustment control unit has caused the humidity adjustment unit 30 to adjust the relative humidity in the storage space.

As a result, the laundry basket 1 can perform deodorization more effectively since discharge products are generated after the storage space is set to an environment having a high deodorizing effect, and the generated discharge products are brought into contact with the clothes stored in the storage space.

[0052] Note that the fan 1014 may be caused to operate in step ST402 of the operation

of FIG. 4 described above, or may be caused to operate in step ST404.

In addition, the fan 1014 is caused to stop, for example, in step ST406 of the operation in FIG. 4 described above.

[0053] The configuration and the like of the laundry basket 1 according to the first embodiment are not limited to the configuration and the like described above, and can be modified as appropriate. Description will be given below.

In the above description, the wire electrodes 1012 are used as discharge electrodes as illustrated in FIG. 2.

However, the discharge electrodes are not limited to the wire electrodes 1012. For example, the discharge electrodes may be ribbon-shaped electrodes or needle electrodes.

A ribbon-shaped electrode includes a conductive ribbon where the cross section is 0.1 mm × 0.5 mm rectangular or similar shape (short side forms the thickness of the ribbon, the thickness is about 0.05 mm to 0.5 mm, the width is about 0.3 mm to 1 mm, made of tungsten, titanium, stainless steel, conductive resin, or the like). In the ribbon-shaped electrode, electric charge is more efficiently achieved when the surface on the short side (0.1 mm) side of a cross-sectional area is directed to the ground electrode. The use of the ribbon-shaped electrodes has the effect of reducing the influence of disconnection due to electrode abrasion by sputtering during an electric discharge as compared to the wire electrodes 1012. In addition, a ribbon-shaped electrode has more strength and is less likely to break as compared to the wire electrodes 1012. A ribbon-shaped electrode may be obtained by working a flat plate (thickness of 0.05 to 0.5 mm) by etching, wire processing, laser processing, sheet metal punching, etc. so that strips having a width of 0.3 to 1.0 mm are lined up, and the circumference may be subjected to bending such as hemming bending or reinforcement with an insulator or the like to be

used as a discharge electrode.

FIG. 5 is a diagram for explaining an example of the discharge mechanism 11 in a case where the wire electrodes 1012 illustrated in FIG. 2 are needle electrodes in the discharge mechanism 11 included in the deodorizing unit 10 of the laundry basket 1 according to the first embodiment.

FIG. 5A is a perspective view of the laundry basket 1 in a state where the storage unit 20 is stored in the deodorizing unit 10, FIG. 5B is a diagram illustrating a part of a cross section taken along line A-A' of FIG. 5A, and FIG. 5C is a diagram illustrating a part of a cross section taken along line B-B' of FIGS. 5A and 5B. FIG. 5D is a diagram for explaining an example of gaps formed by the inner wall 101a and support members 1016 (described later) in the deodorizing case 101. Note that FIG. 5A is the same diagram as FIG. 2A.

[0054] As illustrated in FIG. 5, the deodorizing case 101 includes the wire mesh 1011 and needle electrodes 1015. In this case, the wire mesh 1011 and the needle electrodes 1015 are included in the discharge mechanism 11.

The needle electrodes 1015 are included in the deodorizing case 101 on the opposite side of the accommodating space with respect to the wire mesh 1011 like the wire electrodes 1012 described in FIG. 2.

For example as illustrated in FIG. 5, the needle electrodes 1015 are attached to the storage case 201 by an appropriate method so that the needle electrodes 1015 extend from the upper wall 101c to the bottom wall 101d of the storage case 201.

[0055] As illustrated in FIG. 5A, in a case where the needle electrodes 1015 are used in the discharge mechanism 11, support members for supporting the needle electrodes 1015 are not required. However, the third through-holes 10112 for sending air sent from the fan 1014 to the storage space of the storage case 201 are necessary.

Therefore, the deodorizing case 101 includes support members 1016 without the support holes 1013a (see FIG. 2) (see FIGS. 5C and 5D). The shape of a support member 1016 may be the same as the shape of a support member 1013 that has been described with reference to FIG. 2, except that the support member 1016 does not include the support hole 1013a.

In addition, the support members 1016 and the inner wall 101a may be integrally formed of resin, or the support members 1013 and the inner wall 101a may be separately formed and connected by an appropriate method.

[0056] Note that, in FIG. 5, the upper ends of the needle electrodes 1015 extending from the upper wall 101c to the bottom wall 101d of the storage case 201 are attached to the inner wall 101a of the deodorizing case 101; however, the method of attachment of the needle electrodes 1015 is not limited thereto. For example, the needle electrodes 1015 may extend from the bottom wall 101d to the upper wall 101c of the storage case 201, and the lower ends of the needle electrodes 1015 may be attached to the inner wall 101a.

Furthermore, for example, the needle electrodes 1015 may be attached to the support members 1016 instead of being attached to the inner wall 101a.

[0057] In this manner, the discharge electrodes may be, for example, the needle electrodes 1015. It is only required that the discharge electrodes are caused to perform an electric discharge by the discharge mechanism 11 to generate discharge products and that the discharge products generated by the discharge mechanism 11 are sent from the deodorizing case 101 to the storage case 201 together with air.

[0058] In the above description, for example as illustrated in FIG. 1 and other drawings, the deodorizing unit 10 and the storage unit 20 each have a substantially elliptical shape; however, this is merely an example.

The deodorizing unit 10 and the storage unit 20 may be, for example, circular, rectangular, or donut-shaped. The deodorizing unit 10 and the storage unit 20 may have any shape as long as the storage unit 20 is attachably and detachably stored in the deodorizing unit 10 through the opening of the deodorizing unit 10 and the storage case 201 can store clothes therein through the opening of the storage case 201.

[0059] FIG. 6 is a perspective view of the laundry basket 1 in a case where the storage unit 20 is donut-shaped in the first embodiment. In FIG. 6, the deodorizing unit 10 has a substantially elliptical shape as illustrated in FIG. 1 and other drawings.

Note that illustrated in FIG. 6 is a state in which the storage unit 20 is stored in the deodorizing unit 10, and illustration of the lid 102 and the handle 202 is omitted.

[0060] In the laundry basket 1 as illustrated in FIG. 6, it is possible to attach the humidity adjustment unit 30 on, for example, a further inner side than the inner wall 2010 of the donut-shaped storage unit 20.

In this case, the discharge mechanism 11 is attached, for example, on the other side of the accommodating space with respect to the outer wall 2010 of the storage unit 20 in a state where the donut-shaped storage unit 20 is stored in the deodorizing unit 10.

In addition, contrary to the above-described example, it is possible to attach the discharge mechanism 11 on, for example, a further inner side than the inner wall 2010 of the donut-shaped storage unit 20.

In this case, the humidity adjustment unit 30 is attached, for example, on the other side of the accommodating space with respect to the outer wall 2010 of the storage unit 20 in a state where the donut-shaped storage unit 20 is stored in the deodorizing unit 10.

[0061] Furthermore, for example, both the storage case 201 and the deodorizing case 101 may have a donut shape, and the donut-shaped storage case 201 may be stored in

the donut-shaped deodorizing case 101.

In this case, the discharge mechanism 11 may be provided on the inner wall 1010 of the donut-shaped deodorizing case 101. The inner wall 1010 of the donut-shaped deodorizing case 101 refers to the wall 1010 of the deodorizing case 101 that is closer to the center of the laundry basket 1.

In the laundry basket 1, the discharge mechanism 11 is not always arranged on an outer side with respect to the storage space, and may be arranged on an inner side with respect to the storage space as described above. Alternatively, for example, the discharge mechanism 11 may be arranged below the storage space such as on the bottom wall 101d of the deodorizing case 101.

The discharge mechanism 11 is only required to be arranged outside the wall 2010 of the storage unit 20 with a space therebetween and to generate discharge products to be guided into the storage space through the first through-holes.

In either case, in the discharge mechanism 11, the ground electrode and the discharge electrodes are always arranged close to each other in the order of the storage unit 20, the ground electrode, and the discharge electrodes when viewed from the storage space side in a state where the storage unit 20 is stored in the deodorizing unit 10.

[0062] Furthermore, without limiting to the above-described example, the humidity adjustment unit 30 can be included at an appropriate position in the laundry basket 1.

For example, the humidity adjustment unit 30 may be included inside the storage case 201 included in the storage unit 20, or may be included inside the lid 102 included in the deodorizing unit 10.

[0063] Although the discharge mechanism 11 is included over the entire circumference of the deodorizing case 101 in the above description; however, no limitation is intended

thereto, and may be included at, for example, a part of the wall 1010 of the deodorizing case 101 such as a half the outer circumference of the deodorizing case 101.

By disposing the discharge mechanism 11 at a part of the wall 1010 of the deodorizing case 101 and reducing the installation area of the discharge mechanism 11, the laundry basket 1 is downsized.

[0064] Further alternatively, the discharge mechanism 11 is not limited to being included on the wall 1010 of the deodorizing case 101, and may be included at an appropriate position. However, it is ensured that, in a state where the storage unit 20 is stored in the deodorizing unit 10, the first through-holes 2011 are formed in the wall 2010 of the storage unit 20 facing the discharge mechanism 11 included in the deodorizing unit 10.

Specifically, for example, the discharge mechanism 11 may be attached to the bottom wall 101d of the deodorizing case 101. In this case, it is ensured that, in a state where the storage unit 20 is stored in the deodorizing unit 10, the bottom wall of the storage case 201 facing the discharge mechanism 11 has a mesh shape, and that the discharge products generated by the discharge mechanism 11 and the air are sent into the storage space.

[0065] In addition to inclusion in the deodorizing case 101 of the deodorizing unit 10, the discharge mechanism 11 may be further included, for example, in the handle 202 of the storage unit 20.

For example, the discharge mechanism 11 may be included in the two rod-shaped members (see FIG. 1) of the handle 202.

FIG. 7 is a diagram illustrating an example of a cross section of the handle 202 including the discharge mechanism 11 in the first embodiment. For example, the handle 202 has a shape as illustrated in FIG. 1, and FIG. 7 is a part of a cross section of

one of the two rod-shaped members included in the handle 202.

[0066] As illustrated in FIG. 7, in the handle 202, the wire mesh 1011 is attached to the rod-shaped member so as to cover the surface of the rod-shaped member.

Then, multiple needle electrodes are attached inside the rod-shaped member. In a rod-shaped member, instead of the needle electrodes, for example, wire electrodes may be attached on an inner side of the wire mesh 1011 so as to go around the outer circumference of the rod-shaped member. The needle electrodes or the wire electrodes are attached to the handle 202 by an appropriate installation method.

By including the discharge mechanism 11 also in the storage unit 20 in addition to the deodorizing unit 10, the efficiency of contact between the discharge products and the clothes in the storage space is enhanced, and the deodorizing effect in the storage space is further enhanced.

[0067] In the above description, the handle 202 is securely included in the storage case 201; however, it is not limited thereto, and the handle 202 may have a function of stirring the air in the storage space by rotating.

FIG. 8 is a diagram illustrating an example of a cross-sectional view of the laundry basket 1 in which the handle 202 has a function of stirring the air in the storage space in the first embodiment.

Note that illustration of the storage case 201 and the humidity adjustment unit 30 is omitted in FIG. 8 for convenience of description. Note that illustrated in FIG. 8 is a cross section of the laundry basket 1 with the lid 102 closed.

[0068] The handle 202 includes one rod-shaped member 801, a catch portion 202a provided to the rod-shaped member 801, and a stir unit 802 provided to the rod-shaped member 801.

In the rod-shaped member 801, one end is rotatably supported by the storage

case 201, and the other end is connected with a motor 81 provided to the lid 102 when the lid 102 is closed.

[0069] The stir unit 802 is, for example, a plate-shaped member molded from resin, and at least one or more stir units 802 are provided to the rod-shaped member 801. The stir unit 802 may be formed integrally with the rod-shaped member 801 or may be connected to the rod-shaped member 801 by an appropriate method.

The length of a stir unit 802 in the height direction of the laundry basket 1 may be an appropriate length.

Moreover, the thickness of the stir unit 802 and the length thereof in the direction from the center of the rod-shaped member 801 toward the wall surface of the storage case 201 may be set at any appropriate thickness and length, respectively, that do not interfere when clothes are to be stored in the storage space.

[0070] For example, when a user turns on the power of the laundry basket 1 and inputs a deodorization start instruction, the user inputs a stir instruction by pressing a “stir” button provided on the lid 102 or the like.

The control unit of the laundry basket 1 receives the stir instruction input by the user, and drives the motor 81. With the motor 81 driven, the rod-shaped member 801 rotates, and the air in the storage space is stirred by the stir unit 802.

[0071] In this manner, with the laundry basket 1 including the stir unit 802 for stirring the air in the storage space in the storage unit 20, the contact efficiency between the clothes and discharge products in the storage space can be improved during the deodorizing operation, thereby enhancing the deodorizing effect.

Note that although the example in which the handle 202 includes the stir unit 802 has been described here, no limitation is intended thereto. The stir unit may be provided at a location different from the handle 202, such as providing a propeller as a

stir unit that is driven by a motor on a wall of the storage case 201.

[0072] The laundry basket 1 according to the first embodiment can further include a humidifying mechanism.

FIG. 9 is a diagram for explaining an exemplary configuration of the laundry basket 1 including a humidifying mechanism 90 in the first embodiment.

Note that illustration of the storage case 201 and the humidity adjustment unit 30 is omitted in FIG. 9 for convenience of description. FIG. 9 is a cross-sectional view of the laundry basket 1 with the lid 102 closed.

FIG. 9 is a diagram illustrating an example in which the humidifying mechanism 90 is provided on the surface of the lid 102 of the laundry basket 1 on the accommodating space side.

[0073] The humidifying mechanism 90 includes a humidifying case 901, a water supply unit 902, and a fan 903.

The humidifying case 901 has an opening on the top surface, and the opening is closed by the lid 102.

A hydrophilic film is provided on a bottom surface 901a of the humidifying case 901 facing the opening. The bottom surface 901a includes a plurality of fine holes that allows water drops to pass therethrough.

The bottom surface of the humidifying case 901 is also provided with the water supply unit 902.

The fan 903 is installed inside the humidifying case 901. The fan 903 is, for example, attached to the lid 102 closing the top surface of the humidifying case 901 by an appropriate method. The fan 903 is driven by a motor (not illustrated) attached to the laundry basket 1.

For example, a user stores a small amount of water in the water supply unit 902

before deodorization of the clothes. A small amount of water refers to, for example, about 10 mL of water.

For example, the lid 102 includes a water supply path (not illustrated) communicating with the water supply unit 902, and the user can supply water to the water supply unit 902 via the water supply path.

[0074] When the user inputs a deodorization start instruction and the discharge control unit causes the discharge mechanism 11 to start an electric discharge to generate discharge products (see step ST404 in FIG. 4), the discharge control unit drives the fan 903.

When the fan 903 is driven, the air blown by the fan 903 diffuses the water supplied to the water supply unit 902 into the storage space through the plurality of fine holes included on the bottom surface 901a of the humidifying case 901.

As described above, moisture can be supplied to the storage space by the humidifying mechanism 90 in the laundry basket 1, and thus dry clothes such as sweaters stored in the storage space can be also efficiently deodorized.

[0075] In the above description, the wall 2010 of the storage case 201 has a mesh structure; however, this is merely an example. It is only required that the wall 2010 of the storage case 201 include the first through-holes 2011 and that discharge products and the air can be passed through the first through-holes 2011.

The storage unit 20 is to define the storage space and to include the wall 2010 of the storage case 201 including the first through-holes 2011, and the discharge mechanism 11 is only required to be provided outside the wall 1010 with a space therebetween at a position on the wall 1010 of the deodorizing case 101 facing at least a part of the plurality of first through-holes 2011 in a state where the deodorizing unit 10 stores the storage unit 20 in the accommodating space.

In the above description, the ground electrode of the discharge mechanism 11 is the wire mesh 1011; however, the ground electrode is only required to be made of metal and to include the plurality of second through-holes 10111 through which discharge products and air can pass.

Moreover, the discharge mechanism 11 is only required to include a ground electrode facing the accommodating space and including the plurality of second through-holes 10111, and discharge electrodes provided on the opposite side of the accommodating space with respect to the ground electrode.

[0076] Furthermore, the fan 1014 is included in a space between the inner wall 101a and the outer wall 101b of the deodorizing case 101 in the above description; however, this is merely an example. The fan 1014 may be installed at a place other than the space between the inner wall 101a and the outer wall 101b of the deodorizing case 101 as long as one or more fans 1014 are installed at positions where air can be blown toward the accommodating space so that discharge products generated by the discharge mechanism 11 are moved into the storage space in a state where the storage unit 20 is stored in the deodorizing unit 10.

[0077] In the above description, the laundry basket 1 performs the deodorizing operation on the basis of a deodorization start instruction and a deodorization end instruction input by the user; however, this is merely an example. For example, the laundry basket 1 may perform deodorizing operation when the power is turned on, or the user may set a timer in advance, and the laundry basket 1 may start or end deodorization at the set time.

[0078] In the above description, in the laundry basket 1, the storage unit 20 is attachably and detachably installed inside the deodorizing unit 10; however, this is merely an example. In the laundry basket 1, the storage unit 20 may be installed inside

the deodorizing unit 10 in a secured manner.

[0079] It is assumed in the first embodiment as an example that the storage container is a “laundry basket” used in a house; however, the contents of the first embodiment can be applied to any storage container that can store, therein, a storage item to be deodorized.

[0080] As described above, according to the first embodiment, the laundry basket 1 (storage container) includes: the first wall defining the storage space and formed with first through-holes 2011; and the discharge mechanism 11 for generating discharge products guided into the storage space via the first through-holes 2011, the discharge mechanism 11 arranged outside the first wall with a space therebetween. Therefore, it is possible to provide a storage container capable of removing odors of storage items by efficiently using discharge products.

[0081] Furthermore, according to the first embodiment, the discharge mechanism 11 includes: the ground electrode (wire mesh 1011) having the second through-holes 10111 that correspond to the first through-holes; and the discharge electrode (wire electrodes 1012) arranged at a position where the ground electrode is interposed between the first wall and the discharge electrode, and the discharge products are generated by an electric discharge between the ground electrode and the discharge electrode. Therefore, the ground electrode is installed between the discharge electrode and the storage space on the storage space side with respect to the discharge electrode, and thus a current generated in the discharge mechanism 11 is not transmitted to the storage space, thereby preventing an electric leakage from the discharge mechanism 11 to the storage space. The material of the storage unit 20 can be any appropriate material.

[0082] According to the first embodiment, the laundry basket 1 further includes the humidity adjustment unit 30 for adjusting the relative humidity in the storage unit 20 by

lowering the temperature in the storage space. As a result, it is possible to increase the relative humidity in the storage space when deodorization is performed and to improve the oxidation effect by the discharge products, thereby allowing the inside of the storage space to be an environment in which the deodorization effect is high.

[0083] According to the first embodiment, in the laundry basket 1, the storage unit 20 includes the stir unit 802 for stirring air in the storage space. As a result, the contact efficiency between the clothes and discharge products in the storage space can be improved during the deodorizing operation, thereby enhancing the deodorizing effect.

[0084] Furthermore, according to the first embodiment, the laundry basket 1 includes the blowing unit (fan 1014) that blows air toward the storage space. As a result, the clothes stored in the storage space and discharge products can be efficiency brought into contact when deodorization is performed with the storage unit 20 stored in the deodorizing unit 10, thereby enhancing the deodorizing effect of clothes.

[0085] Note that the present invention may include modifications of any component of the embodiment, or omission of any component of the embodiment within the scope of the present invention.

INDUSTRIAL APPLICABILITY

[0086] A storage container according to the present invention can remove an odor of storage items stored therein, and thus is applicable to storage containers such as laundry baskets for storing clothes or the like before washing.

REFERENCE SIGNS LIST

[0087] 1: laundry basket, 10: deodorizing unit, 10a: second opening, 11: discharge mechanism, 20: storage unit, 20a: first opening, 30: humidity adjustment unit, 81:

motor, 90: humidifying mechanism, 101: deodorizing case, 102: lid, 201: storage case, 202: handle, 202a: catch portion, 301: Peltier circuit board, 302: Peltier element, 801: rod-shaped member, 802: stir unit, 901: humidifying case, 902: water supply unit, 1010, 2010: wall, 1011: wire mesh, 1012: wire electrode, 1013, 1016: support member, 903, 1014: fan, 1015: needle electrode, 2011: first through-hole, 10111: second through-hole, 10112: third through-hole

CLAIMS

1. A storage container for storing a storage item, the storage container comprising:
 - a first wall defining a storage space and formed with a first through-hole; and
 - a discharge mechanism for generating a discharge product to be guided into the storage space via the first through-hole, the discharge mechanism disposed outside the first wall with a space between the discharge mechanism and the first wall, wherein, the discharge mechanism comprises:
 - a ground electrode having a second through-hole that corresponds to the first through-hole; and
 - a discharge electrode disposed at a position where the ground electrode is interposed between the first wall and the discharge electrode, andthe discharge product is generated by an electric discharge between the ground electrode and the discharge electrode.
2. The storage container according to claim 1,
 - wherein the first through-hole and the second through-hole are arranged so that the discharge product travels into the storage space.
3. The storage container according to claim 1 or 2, further comprising:
 - a storage unit comprising the first wall and a first opening for putting and taking the storage item in and out of the storage space; and
 - a deodorizing unit comprising a second wall defining an accommodating space in which the storage unit is attachably and detachably accommodated, and a second opening for putting and taking the storage unit in and out of the accommodating space,

the deodorizing unit comprising the discharge mechanism in the second wall at a position facing at least a part of the first through-hole in a state where the storage unit is accommodated in the accommodating space.

4. The storage container according to claim 3,
wherein the discharge mechanism faces the accommodating space.
5. The storage container according to claim 1, further comprising:
a humidity adjustment unit for adjusting relative humidity in the storage space by lowering temperature in the storage space.
6. The storage container according to claim 5, further comprising:
a humidity adjustment control unit for controlling the humidity adjustment unit; and
a discharge control unit for controlling the discharge mechanism,
wherein the discharge control unit causes the discharge mechanism to generate the discharge product after the humidity adjustment control unit has caused the humidity adjustment unit to adjust the relative humidity in the storage space.
7. The storage container according to claim 1, further comprising:
a stir unit for stirring air in the storage space.
8. The storage container according to claim 1, further comprising:
a blowing unit for blowing air toward the storage space.

9. The storage container according to claim 3, further comprising:
a lid for opening and closing the second opening of the deodorizing unit;
an interlock device for locking or unlocking the lid; and
a lid control unit for causing the interlock device to lock or unlock the lid.
10. The storage container according to claim 9,
wherein the discharge product includes ozone gas,
the lid control unit causes the interlock device to lock the lid in a case where an ozone gas concentration in the storage space is greater than a predetermined value, or in a case where a discharge voltage in the discharge mechanism is greater than 0 kV, and
the lid control unit causes the interlock device to unlock the lid in a case where the ozone gas concentration in the storage space is less than or equal to the predetermined value and the discharge voltage in the discharge mechanism is 0 kV.
11. The storage container according to claim 6,
wherein the discharge product includes ozone gas, and
the discharge control unit causes the discharge mechanism to control a concentration of the ozone gas to be generated to be less than or equal to a predetermined value.
12. A storage container for storing a storage item, the storage container comprising:
a first wall defining a storage space and formed with a first through-hole;
a discharge mechanism for generating a discharge product guided into the storage space via the first through-hole, the discharge mechanism disposed outside the first wall with

a space between the discharge mechanism and the first wall; and
a humidity adjustment unit for adjusting relative humidity in the storage space by lowering temperature in the storage space.

13. A storage container for storing a storage item, the storage container comprising:

a first wall defining a storage space and formed with a first through-hole;
a discharge mechanism for generating a discharge product guided into the storage space via the first through-hole, the discharge mechanism disposed outside the first wall with a space between the discharge mechanism and the first wall; and
a stir unit for stirring the air in the storage space.

14. A storage container for storing a storage item, the storage container comprising:

a first wall defining a storage space and formed with a first through-hole;
a discharge mechanism for generating a discharge product guided into the storage space via the first through-hole, the discharge mechanism disposed outside the first wall with a space between the discharge mechanism and the first wall; and
a blowing unit for blowing air toward the storage space.