

(54) Invention Title A Cat Litter Box

(57) Abstract The present invention relates to the technical field of pet supplies, and more specifically, to a cat litter box. The cat litter box comprises a base and a litter box body rotatable relative to the base. The litter box body is provided therein with a litter placement area, a clean litter compartment, a waste collection compartment, and a separation mechanism disposed inside the litter box body. The separation mechanism defines an inlet of the clean litter compartment and is adjacent to an inlet of the waste collection compartment. When the litter box body performs a single cleaning rotation, the structure of the separation mechanism enables it to simultaneously: allow clean litter to pass through itself into the clean litter compartment, and guide clumped waste along its surface to the inlet of the waste collection compartment. The inlet of the waste collection compartment is provided with a one-way sealing device. The one-way sealing device is used to seal the inlet of the waste collection compartment after the waste has entered, thereby securely locking the waste and odors inside the waste collection compartment. Meanwhile, the filtered clean litter also falls back from the clean litter compartment into the litter placement area, thus completing an efficient cleaning cycle.

Claims

1. A cat litter box, characterized in that it comprises: a base (1); a litter box body (2) rotatably mounted on said base (1), wherein the litter box body (2) is provided therein with a litter placement area (21), a clean litter compartment (3), and a waste collection compartment (4); and a separation mechanism (31) disposed inside said litter box body (2), said separation mechanism (31) defining an inlet of the clean litter compartment (3) and being adjacent to an inlet of the waste collection compartment (4); wherein when the litter box body (2) performs a cleaning rotation, the structure of said separation mechanism (31) enables it to simultaneously: allow clean litter to pass through itself into said clean litter compartment (3); and guide clumped waste along its surface into said waste collection compartment (4); wherein the inlet of said waste collection compartment (4) is provided with a one-way sealing device (41) for sealing the inlet of said waste collection compartment (4) after the waste has entered.
2. The cat litter box according to claim 1, characterized in that the structure of said separation mechanism (31), during the cleaning rotation of said litter box body (2), diverts clean litter to both said clean litter compartment (3) and said waste collection compartment (4); wherein the litter flowing into the waste collection compartment (4) is used to cover said waste.
3. The cat litter box according to claim 2, characterized in that said cat litter box further comprises a litter replenishing mechanism, said litter replenishing mechanism being used to add new litter to said litter placement area (21), and

to facilitate the diversion of a portion of clean litter by said separation mechanism (31) into said waste collection compartment (4), thereby achieving a gradual replacement of the litter.

4. The cat litter box according to claim 1, characterized in that said clean litter compartment (3) and said waste collection compartment (4) are arranged side-by-side.
5. The cat litter box according to claim 1, characterized in that one end of said clean litter compartment (3) is pivotally connected to said litter box body (2) via a rotating shaft (33), and the other end of said clean litter compartment (3) is fixed to said litter box body (2) by a snap-fit connection.
6. The cat litter box according to claim 1, characterized in that said one-way sealing device (41) is a one-way door; said one-way door is pivotally mounted and, during the cleaning rotation of said litter box body (2), opens to allow said waste to enter said waste collection compartment (4); and after the cleaning rotation is completed, it automatically returns to a closed state under its own gravity.
7. The cat litter box according to claim 3, characterized in that said litter box body (2) is provided with an integrally formed locking slot (22), the bottom of said locking slot (22) being provided with a through-hole (23); said litter replenishing mechanism comprises a locking block (51), said locking block (51) being configured to pass through said through-hole (23) and be fixed within said locking slot (22); said clean litter compartment (3) is a movable structure, and the end of said clean litter compartment (3) is provided with a hollow-structured positioning block (32); wherein when the clean litter compartment (3) is mounted to said litter box body (2), said positioning block (32) is inserted into said locking slot (22) and is fitted over the outer periphery of said locking block (51) by means of an interference fit.
8. The cat litter box according to claim 5, characterized in that said waste collection compartment (4) is detachably connected to said clean litter compartment, the connection mechanism comprising: a mounting pin (34) provided on one of said clean litter compartment (3) or said waste collection compartment (4); and a mounting slot (48) provided on the other compartment and matching said mounting pin (34), said mounting slot (48) being configured as a guide path; wherein the detachable connection between said clean litter compartment (3) and said waste collection compartment (4) is achieved through said connection mechanism, which also prevents accidental separation of the two during the cleaning rotation of said litter box body (2).
9. The cat litter box according to claim 8, characterized in that said cat litter box further comprises a waste bag retaining ring (43); said waste bag retaining ring (43) is snap-fitted at the inlet of said waste collection compartment (4) for clamping and securing the opening of a waste bag, such that the opening of said

waste bag is kept in an open state at the inlet of the waste collection compartment (4).

10. The cat litter box according to claim 9, characterized in that said waste bag retaining ring (43) is integrally formed by stamping a metal sheet.
11. The cat litter box according to claim 5, characterized in that said waste collection compartment (4) is mounted on the litter box body (2), and in a state where said clean litter compartment (3) is fixed to said litter box body (2) by a snap-fit connection, said clean litter compartment (3) covers the top of said waste collection compartment (4).
12. The cat litter box according to claim 11, characterized in that said rotating shaft (33) is detachably fixed to said litter box body (2) by a manual quick-release fastener (35); thereby enabling said clean litter compartment (3) to be detached from said litter box body (2) without tools.
13. The cat litter box according to claim 11, characterized in that the inlet of said waste collection compartment (4) is provided with a retaining groove (49) for accommodating the waste bag retaining ring (43); said waste bag retaining ring (43) is slidable into said retaining groove (49); and in a state where said clean litter compartment (3) is fixed to said litter box body (2) by a snap-fit connection, a part of said clean litter compartment (3) abuts against said waste bag retaining ring (43) to restrict it from disengaging from said retaining groove (49).

Description

Technical Field [0001] The present invention relates to the technical field of pet supplies, and more specifically, to a cat litter box.

Background Art [0002] With the continuous improvement of material living standards, an increasing number of households, especially single young people, enjoy keeping pets as daily companions and playmates in their leisure time. In economically developed metropolises, due to limited rental space, more and more people are inclined to keep cats. Cats excrete on cat litter and bury their waste, which requires people to manually clean the waste from the litter, a time-consuming and laborious task. Moreover, people need to go out to work during the day and cannot clean the cat waste in a timely manner, leading to accumulation. Accumulated waste not only makes the room smell bad due to unpleasant odors but also brings a series of hygiene problems. Therefore, smart cat litter boxes were invented to separate cat litter from waste, thereby freeing the hands of cat owners.

[0003] However, existing smart cat litter boxes in the prior art have the following defects: First, the filter screen and the inlet of the waste collection compartment in existing smart litter boxes are far apart. During operation, clumped litter and feces

collide, rub, and roll against the inner wall of the sphere multiple times. This can easily lead to two serious consequences: one is that relatively loose urine clumps or feces break apart during tumbling, and the debris mixes back into the clean litter, resulting in incomplete cleaning; the other is that the waste smears and sticks to the inner wall of the sphere during rolling, causing large-scale secondary contamination. After cleaning the clumps, the user has to face a dirty inner wall and perform additional wiping, which greatly increases the workload and contradicts the original intention of “automatic cleaning.” Even worse, if the cat has just excreted and the feces are not completely dry, starting the cleaning program can cause a “smearing disaster,” and may even contaminate the cat itself. Second, existing smart litter boxes have a non-detachable overall structure, making cleaning extremely inconvenient. Third, after separation, the waste loses the cover of the cat litter and is directly dumped into the waste bag, exposed to the air. Although there are baffles or flip covers, the sealing is very limited, and odors continue to escape from the gaps. Many products rely on activated carbon packs or special deodorants to absorb odors, which is a palliative solution. It not only requires users to continuously invest in consumables, but the effect also diminishes over time and cannot solve the problem at its root.

[0004] Furthermore, cat litter is continuously consumed during use and needs to be replenished regularly. Almost all smart litter boxes on the market require users to complete this step manually: check the remaining litter level, open the device, and pour in new litter. This process, though seemingly simple, breaks the “automation” closed-loop experience and becomes an extra burden that requires constant attention. If the user forgets to replenish, insufficient litter in the box will lead to urine not being fully absorbed, failure to form effective clumps, and even direct leakage to the bottom of the box, resulting in cleaning failure and foul odors. This makes the so-called “automatic cat litter box” not truly “worry-free” for the user.

Summary of the Invention [0005] To solve the aforementioned technical problems of existing cat litter boxes, the present invention provides a cat litter box.

[0006] The present invention is realized by the following technical solution: a cat litter box, which comprises a litter box body rotatably mounted on a base, wherein the litter box body is provided with a litter placement area, a clean litter compartment, and a waste collection compartment; and a separation mechanism disposed inside the litter box body, the separation mechanism defining an inlet of the clean litter compartment and being adjacent to an inlet of the waste collection compartment. Wherein, when the litter box body performs a cleaning rotation, the structure of the separation mechanism enables it to simultaneously: allow clean litter to pass through itself into the clean litter compartment; and guide clumped waste along its surface into the waste collection compartment. The inlet of the waste collection compartment is provided with a one-way sealing device for sealing the inlet of the waste collection compartment after the waste has entered.

[0007] As a further improvement of the present invention, the separation mechanism is also capable of diverting clean litter to the clean litter compartment

and the waste collection compartment during the cleaning rotation of the litter box body, and the litter flowing to the waste collection compartment is used to cover the waste.

[0008] As a further improvement of the present invention, the cat litter box further comprises a litter replenishing mechanism, which is used to add new litter to the litter placement area to increase the total amount of litter, and when the separation mechanism diverts clean litter, it promotes a portion of the clean litter to enter the waste collection compartment, achieving a gradual replacement of the litter.

[0009] As a further improvement of the present invention, the clean litter compartment and the waste collection compartment are arranged side-by-side.

[0010] As a further improvement of the present invention, one end of the clean litter compartment is pivotally connected to the litter box body via a rotating shaft, and the other end of the clean litter compartment is configured to be fixed to the litter box body by a snap-fit connection.

[0011] As a further improvement of the present invention, the one-way sealing device is a one-way door; the one-way door is pivotally mounted and configured to: open during the cleaning rotation of the litter box body to allow waste to enter the waste collection compartment; and automatically return to a closed position under its own gravity after the cleaning rotation is completed.

[0012] As a further improvement of the present invention, the litter box body is provided with an integrally formed locking slot, and the bottom of the locking slot is provided with a through-hole. The litter replenishing mechanism comprises a locking block, which is configured to pass through the through-hole and be fixed within the locking slot. The clean litter compartment is a movable structure, and the end of the clean litter compartment is provided with a hollow-structured positioning block. Wherein, when the clean litter compartment is mounted to the litter box body, the positioning block is inserted into the locking slot and is fitted over the outer periphery of the locking block by means of an interference fit.

[0013] As a further improvement of the present invention, the waste collection compartment is detachably connected to the clean litter compartment, the connection mechanism comprising: a mounting pin provided on one of the clean litter compartment or the waste collection compartment; and a mounting slot provided on the other compartment and matching the mounting pin, the mounting slot being configured as a guide path. The connection mechanism achieves a detachable connection between the clean litter compartment and the waste collection compartment and prevents them from accidentally separating during the cleaning rotation of the litter box body.

[0014] As a further improvement of the present invention, the cat litter box further comprises a waste bag retaining ring. The waste bag retaining ring is configured to be snap-fitted at the inlet of the waste collection compartment to clamp and secure

the opening of a waste bag, thereby keeping the bag opening in an open state at the inlet of the waste collection compartment.

[0015] As a further improvement of the present invention, the waste bag retaining ring is integrally formed by stamping a metal sheet.

[0016] As a further improvement of the present invention, the waste collection compartment is mounted on the litter box body, and in a state where the clean litter compartment is fixed to the litter box body by a snap-fit connection, the clean litter compartment covers the top of the waste collection compartment.

[0017] As a further improvement of the present invention, the rotating shaft is detachably fixed to the litter box body by a manual quick-release fastener; thereby enabling the clean litter compartment to be detached from the litter box body as a whole without tools.

[0018] As a further improvement of the present invention, the inlet of the waste collection compartment is provided with a retaining groove for accommodating the waste bag retaining ring. The waste bag retaining ring (43) is configured to be slidable into the retaining groove, and in a state where the clean litter compartment is fixed to the litter box body by a snap-fit connection, a part of the clean litter compartment abuts against the waste bag retaining ring to restrict it from disengaging from the retaining groove.

[0019] The technical solution provided by the present invention has the following beneficial effects: First, in terms of cleaning efficiency and internal hygiene, this product achieves a revolutionary breakthrough. We have completely reconstructed the internal waste disposal path. By minimizing the distance between the filter screen and the inlet of the waste collection compartment, we have achieved “zero-tumble” vertical cleaning. After being precisely separated, the clumped waste falls into the waste collection compartment almost instantaneously and in one go, completely avoiding prolonged tumbling, collision, and friction against the inner wall. This brings dual benefits: one is that it fundamentally prevents urine clumps and feces from breaking apart due to tumbling, preventing debris from contaminating the clean litter and ensuring the lasting purity of the litter; the other is that it effectively prevents waste from smearing and sticking to the inner wall, eliminating the “smearing disaster” caused by starting the cleaning before feces are dry, and keeping the inner chamber clean at all times. In addition, to address the cleaning difficulty of traditional non-detachable litter boxes, this product adopts a modular, detachable design. The core components can be easily separated for no-dead-angle water washing, ensuring the absolute hygiene of the device itself and making cleaning exceptionally easy.

[0020] Second, we have solved the “last mile” problem of the automated experience—manual litter replenishment. The product has a built-in automatic litter adding mechanism that automatically replenishes the cat litter. This creates a complete automated closed-loop from cleaning and deodorizing to replenishing, freeing the user from constantly monitoring the litter level. This not only avoids

urine leakage, cleaning failure, and foul odors caused by forgetting to replenish litter, but also allows users to be completely at ease when on business trips or vacations, achieving a truly “worry-free” and “hands-free” experience, making smart cat-keeping life a reality.

[0021] Finally, in terms of odor control, we have innovatively abandoned traditional deodorizing methods that rely on consumables and introduced a unique “source-locking odor” technology. Each time the cat litter and waste are separated, the automatic litter adding mechanism precisely releases an appropriate amount of new litter into the litter area. Since the capacity of the clean litter compartment is fixed, excess litter will flow into the waste collection compartment, covering the waste and forming the first physical barrier. Then, the waste collection compartment door automatically closes, providing a second active seal. This dual physical odor-locking solution of “covering + sealing” effectively locks in odors at the source without the need for deodorants or activated carbon packs, keeping the indoor air fresh for a long time, which is both economical and environmentally friendly.

Brief Description of the Drawings [0022] FIG. 1 is a schematic structural view of a cat litter box provided in Embodiment 1 of the present invention. [0023] FIG. 2 is a schematic view of the internal structure of the cat litter box with both the clean litter compartment and the waste collection compartment mounted on the litter box body, provided in Embodiment 1 of the present invention. [0024] FIG. 3 is a schematic view of the internal structure of the cat litter box provided in Embodiment 1 of the present invention. [0025] FIG. 4 is a schematic structural view showing the clean litter compartment separated from the litter box body, provided in Embodiment 1 of the present invention. [0026] FIG. 5 is a schematic structural view showing the clean litter compartment separated from the waste collection compartment, provided in Embodiment 1 of the present invention. [0027] FIG. 6 is a schematic structural view showing the litter replenishing mechanism separated from the litter box body, provided in Embodiment 1 of the present invention. [0028] FIG. 7 is a schematic structural view showing the positioning block on the clean litter compartment being inserted into the locking slot, provided in Embodiment 1 of the present invention. [0029] FIG. 8 is a schematic view of the internal structure of one type of litter replenishing mechanism provided in Embodiment 1 of the present invention. [0030] FIG. 9 is a schematic view showing the flow control block separated from the chamber in another type of litter replenishing mechanism provided in Embodiment 1 of the present invention. [0031] FIG. 10 is a schematic view of the internal structure of another type of litter replenishing mechanism provided in Embodiment 1 of the present invention. [0032] FIG. 11 is a schematic view of the internal structure of a cat litter box provided in Embodiment 2 of the present invention. [0033] FIG. 12 is a schematic view of the cat litter box with the clean litter compartment opened, provided in Embodiment 2 of the present invention. [0034] FIG. 13 is a partial structural schematic view showing the separation mechanism installed at the inlet of the clean litter compartment in Embodiment 2 of the present invention. [0035] Reference numerals in the figures: 1, base; 2, litter box body; 21, litter placement area; 22, locking slot; 23, through-hole;

24, insertion slot; 25, retaining groove; 3, clean litter compartment; 31, separation mechanism; 32, positioning block; 33, rotating shaft; 34, mounting pin; 35, manual quick-release fastener; 36, rotating shaft through-hole; 4, waste collection compartment; 41, one-way sealing device; 42, baffle; 43, waste bag retaining ring; 44, fixing clip; 45, inlet area; 46, sliding area; 47, storage area; 48, mounting slot; 49, one-way door fixing frame; 5, litter replenishing hopper; 51, protruding structure; 52, litter replenishing box; 53, flow control block; 54, litter replenishing channel; 541, metering chamber; 542, feed inlet; 543, discharge outlet; 55, fixing chamber; 551, chamber body; 552, chamber inlet; 553, chamber outlet.

Detailed Description of the Embodiments [0036] Hereinafter, the present invention will be further described in conjunction with specific embodiments. It should be noted that, without conflict, the various embodiments or technical features described below can be arbitrarily combined to form new embodiments.

[0037] In the description of the present invention, it should be noted that for directional terms, such as “center,” “transverse,” “longitudinal,” “length,” “width,” “thickness,” “upper,” “lower,” “front,” “rear,” “left,” “right,” “vertical,” “horizontal,” “top,” “bottom,” “inner,” “outer,” “clockwise,” “counterclockwise,” etc., which indicate orientation and positional relationships, are based on the orientation or positional relationships shown in the drawings. They are merely for the convenience of describing the present invention and simplifying the description, and are not intended to indicate or imply that the referred device or element must have a specific orientation, be constructed and operated in a specific orientation, and cannot be understood as limiting the specific protection scope of the present invention. The terms “first,” “second,” etc., in the description and claims of the present invention are used to distinguish similar objects and not necessarily to describe a specific order or sequence. The terms “comprising” and “having” and any of their variations in the description and claims of the present invention are intended to cover a non-exclusive inclusion, for example, a process, method, system, product, or device that comprises a series of steps or units is not necessarily limited to those steps or units clearly listed, but may include other steps or units not clearly listed or inherent to such processes, methods, products, or devices.

[0038] This embodiment provides a cat litter box. Referring to FIGS. 1 to 3, it comprises a base 1 and a litter box body 2 with an opening. The litter box body 2 is rotatably mounted on the base 1. The litter box body 2 can be a spherical or hemispherical structure. This structure ensures that the litter box body 2 has no sharp inner corners, which can effectively prevent litter and dirt from accumulating in corners and allows the litter to flow smoothly during rotation. The litter box body 2 is provided with a litter placement area 21, a clean litter compartment 3, a waste collection compartment 4, and a separation mechanism 31. The separation mechanism 31 is used to define the inlet of the clean litter compartment 3 and is adjacent to the inlet of the waste collection compartment 4. The litter and waste in the litter placement area 21 can flow to the separation mechanism 31 when the litter box body 2 performs a single cleaning rotation. The separation mechanism 31 can simultaneously allow the separated clean litter to pass through and enter the

clean litter compartment 3, and the separated clumped waste can be guided along the surface of the separation mechanism 31 to the inlet of the waste collection compartment 4 and enter it. In addition, the separation mechanism 31 is also used to divert part of the clean litter to the clean litter compartment 3 and the waste collection compartment 4 when the litter box body 2 rotates, and the litter flowing to the waste collection compartment 4 is used to cover the waste. When the separation mechanism 31 diverts clean litter, it promotes a portion of the clean litter to enter the waste collection compartment 4, achieving a gradual replacement of the litter. The litter placement area 21 can be connected to the opening. The size of the opening should be sufficient for an adult cat to easily pass through and enter the litter box body 2, and the lower edge of the opening is at a moderate distance from the bottom. This allows the opening to be convenient for the cat to enter while effectively preventing the cat from carrying litter out of the box when digging in the litter placement area 21. In use, a certain amount of litter is placed in the litter placement area 21, and the cat enters the litter placement area 21 through the opening to defecate. The clean litter compartment 3 and the waste collection compartment 4 can be installed side-by-side in the litter box body 2. The clean litter compartment 3 and the waste collection compartment 4 are preferably arranged side-by-side in the radial direction within the litter box body 2. This radial side-by-side arrangement makes the entire litter box structure compact and also allows the separated waste to smoothly enter the waste collection compartment 4 as the litter box body 2 rotates. The inlets of the clean litter compartment 3 and the waste collection compartment 4 can be set to face downwards and are respectively connected to the litter placement area 21. The separation mechanism 31 can be set at the inlet of the clean litter compartment 3. One end of the separation mechanism 31 is hinged to the side of the clean litter compartment 3 near the waste collection compartment 4, and the other end of the separation mechanism 31 abuts against the inner side of the left wall of the clean litter compartment 3. The right side of the separation mechanism 31 faces the litter placement area 21, and the separation mechanism 31 is inclined from the end of the left wall of the clean litter compartment 3 towards the inlet of the waste collection compartment 4. Through the above setting, the inlet of the clean litter compartment 3 can face the litter placement area 21 when the litter box body 2 is stationary, and when the litter box body 2 rotates, it facilitates the rapid entry of litter and waste from the litter placement area 21 into the separation mechanism 31. The separation mechanism 31 can filter the litter and waste from the litter placement area 21. The filtered litter will pass through the separation mechanism 31 and enter the clean litter compartment 3, and the filtered waste will flow along the separation mechanism 31 towards the waste collection compartment 4 and enter the waste collection compartment 4 through its inlet. And when the litter box body 2 rotates back to its original position, the filtered litter collected in the clean litter compartment 3 will automatically fall back into the litter placement area 21 under gravity. This portion of the litter can form a usable litter surface in the litter placement area 21 for the next use, thereby achieving the purpose of reusing the litter and effectively avoiding litter waste. At the same time, the waste that enters the waste collection

compartment 4 will also be effectively separated and stored in a sealed manner, which is convenient for users to clean regularly.

[0039] The separation mechanism 31 can be a filter screen, and its material can be high-strength plastic or stainless steel. The purpose of selecting the above materials is to make the separation mechanism 31 resistant to the abrasion of cat litter and the corrosion of waste, thereby improving the service life of the separation mechanism 31. In this embodiment, the size of the filter holes of the separation mechanism 31 can be slightly larger than the diameter of new cat litter. The purpose of this setting is that the unclumped, granular clean litter on the separation mechanism 31 can smoothly pass through the filter holes and fall into the clean litter compartment 3, while the separation mechanism 31 can intercept all the larger clumps of waste formed by absorbing urine or wrapping feces from passing through the filter holes, thereby achieving the purpose of effectively separating the litter and waste in the litter placement area 21. The separation mechanism 31 can also be set as a curved surface structure with a track-like arc, so that the separation mechanism 31 can fit the inner wall of the litter box body 2. The purpose of this design is that the litter and waste in the litter placement area 21 can slide more smoothly onto the separation mechanism 31 as the litter box body 2 rotates.

[0040] The base 1 can be made of high-strength, high-toughness engineering plastics (such as ABS, PP, etc.) through injection molding. The base 1 made of the above materials and manufacturing methods can ensure that it has sufficient load-bearing capacity and durability. The bottom of the base 1 can also be provided with anti-slip foot pads (e.g., rubber or silicone material) when in use to increase the stability of the base 1 when placed on a smooth floor, to prevent the base 1 from sliding when the cat enters or exits the litter box body 2 or when the user rotates the litter box body 2. The rotation between the base 1 and the litter box body 2 can be achieved by manual rotation or by setting a driving structure such as a drive motor to drive the litter box body 2 to rotate relative to the base 1. Since the method of driving the litter box body 2 to rotate by a motor is common in the prior art, this part will not be described in detail.

[0041] Referring to FIGS. 2 and 3, the inlet of the waste collection compartment 4 can also be rotatably installed with a one-way sealing device 41, which is used to seal the inlet of the waste collection compartment 4 after the waste enters. In this solution, the one-way sealing device 41 can be a one-way door, which can rotate towards the inside of the waste collection compartment 4 to open the inlet of the waste collection compartment 4 when the litter box body 2 rotates. The one-way sealing device 41 rotates back to the inlet of the waste collection compartment 4 during the process of the litter box body 2 rotating back to its original position, thereby blocking the inlet of the waste collection compartment 4. In this embodiment, one end of the one-way sealing device 41 is hinged to the side of the waste collection compartment 4 away from the clean litter compartment 3, and the side of the waste collection compartment 4 near the clean litter compartment 3 is provided with a baffle 42. By setting the baffle 42, the rotation path of the one-way sealing device 41 can be limited from the upper end surface of the baffle 42 to the

inner wall of the side of the waste collection compartment 4 away from the clean litter compartment 3. When the one-way sealing device 41 rotates, it rotates with the hinge point between the one-way sealing device 41 and the waste collection compartment 4 as the rotating shaft 33 and the length of the one-way sealing device 41 itself as the radius. Through this setting, when the litter box body 2 rotates, the one-way sealing device 41 rotates towards the inside of the waste collection compartment 4 under its own gravity, to open the inlet of the waste collection compartment 4. When the litter box body 2 rotates back to its original position, the one-way sealing device 41 will abut against the upper end surface of the baffle 42 under its own gravity to block the inlet of the waste collection compartment 4, thereby securely locking the waste and odors in the waste collection compartment 4. At the same time, the filtered clean litter will also fall back from the clean litter compartment 3 into the litter placement area 21, thus completing an efficient cleaning cycle. And in this embodiment, the opening and closing of the one-way sealing device 41 do not require electric drive, the operation is simple, energy is saved, and the structure is relatively simplified, which provides convenience for subsequent maintenance and cleaning.

[0042] A waste bag is placed in the waste collection compartment 4 to collect the waste that enters the waste collection compartment 4. The inlet of the waste collection compartment 4 also includes a waste bag retaining ring 43, which is configured to be snap-fitted at the inlet of the waste collection compartment 4. The waste bag retaining ring 43 is used to clamp and fix the opening of the waste bag at the inlet of the waste collection compartment 4, so that the opening of the waste bag remains open at the inlet of the waste collection compartment 4 and faces the separation mechanism 31. In practical application, when the litter box body 2 rotates, the litter and waste in the litter placement area 21 can enter the separation mechanism 31 for filtering, and the filtered waste can enter the waste bag along the separation mechanism 31 and through the inlet of the waste collection compartment 4. The one-way sealing device 41 is set above the waste bag retaining ring 43 in the vertical direction. This design allows the one-way sealing device 41 in this embodiment to block the inlet of the waste collection compartment 4 and lock the opening of the waste bag before the litter box body 2 rotates and returns to its original position. This allows the waste bag opening and the waste collection compartment 4 to be in a closed state when the litter box body 2 returns to its original position, so that the one-way sealing device 41 can simultaneously seal the opening of the waste bag and the inlet of the waste collection compartment 4, thereby preventing the waste in the waste bag from flowing back. Furthermore, the one-way sealing device 41 clamps the opening of the waste bag and blocks the inlet of the waste collection compartment 4, creating a sealed space within the waste collection compartment 4, preventing odors from spreading and preventing waste from flowing back into the litter box and contaminating it. The waste bag retaining ring 43 can be a frame structure, which can be square or circular, and its structure matches the inlet of the waste collection compartment 4, so that the waste bag retaining ring 43 can be fitted at the inlet of the waste collection compartment 4. In actual use, the user can fold the opening of the waste bag and put it on the waste bag

retaining ring 43, and then snap-fit the waste bag retaining ring 43 at the inlet of the waste collection compartment 4. This operation can ensure that the waste bag retaining ring 43 can hold the opening of the waste bag open and clamp it firmly, ensuring that the opening of the waste bag always faces the separation mechanism 31, so that the waste filtered by the separation mechanism 31 can enter the waste bag from the inlet of the waste collection compartment 4 along the separation mechanism 31 under the rotation of the litter box body 2. The waste bag retaining ring 43 is integrally formed by stamping a metal sheet, so that the waste bag retaining ring 43 has a small thickness while having sufficient structural rigidity to resist deformation when fitting the waste bag.

[0043] Referring to FIG. 3, the end of the waste collection compartment 4 is also fixedly installed with a fixing clip 44, which is used to clamp the end of the waste bag placed in the waste collection compartment 4. The fixing clip 44 can be a simple spring clip or a buckle. By setting the fixing clip 44 and the waste bag retaining ring 43, the opening and the end position of the waste bag can be fixed separately, preventing the waste bag from swinging in the waste collection compartment 4 with the rotation of the litter box body 2, and improving the stability of the waste bag in the waste collection compartment 4. By setting the waste bag retaining ring 43 and the fixing clip 44, not only can the purpose of fixing the waste bag be achieved, but also when replacing the waste bag, one only needs to release the fixing clip 44 and remove the waste bag retaining ring 43 from the inlet of the waste collection compartment 4, and then lift and tie the bag opening to remove the waste bag from the waste collection compartment 4, making the entire replacement process clean and hygienic.

[0044] In this embodiment, a waste bag mounting frame can also be used to replace the fixing clip 44. The waste bag mounting frame can be a rectangular structure with a hollow structure and an opening, which can be used to place a whole roll of waste bags, and the waste bags can be pulled out from the opening. The opening of the pulled-out waste bag can be fixed at the inlet of the waste collection compartment 4 by the waste bag retaining ring 43, so that the waste bag can also be fixed in the waste collection compartment 4 by the waste bag mounting frame and the waste bag retaining ring 43.

[0045] In this solution, the waste collection compartment 4 mainly includes the waste collection compartment 4 itself and the one-way sealing device 41. Therefore, considering the balance of the overall function, cost, and durability of the waste collection compartment 4, the waste collection compartment 4 of this embodiment is preferably made of plastic material (such as ABS, PP, or HDPE) through injection molding. The advantages of using plastic material are that it is lightweight, waterproof, corrosion-resistant, easy to form into complex structures, and has a lower manufacturing cost. The one-way sealing device 41 can be made of stamped metal material, such as stainless steel or galvanized steel sheet. The purpose of selecting metal material for the one-way sealing device 41 is as follows: the one-way sealing device 41 made by stamping is relatively thin, which can maximize the cross-sectional area of the inlet of the waste collection compartment 4 within a limited

size, thereby accelerating the speed at which the waste on the separation mechanism 31 enters the waste collection compartment 4. Secondly, the entire component where the one-way sealing device 41 is located is made of metal material, which gives the one-way sealing device 41 better rigidity and impact resistance, so that the one-way sealing device 41 can withstand the impact of falling waste clumps for a long time without damage or deformation, improving the service life of the one-way sealing device 41. In this embodiment, by selecting plastic material for the waste collection compartment 4 and metal material for the one-way sealing device 41, the weight of the entire waste collection compartment 4 can be reduced, which is convenient for the rotation of the litter box body 2, and at the same time, the durability of the entire waste collection compartment 4 can be improved, thereby extending the service life of the entire cat litter box.

[0046] Further, to allow the user to conveniently know whether the waste bag in the waste collection compartment 4 is full without disassembling the device to check, an observation port can be provided on the waste collection compartment 4 at an easily observable position (e.g., the side or end face). The observation port can be a small window covered with a transparent plastic sheet (such as PC or acrylic), or it can be just a simple opening. Through this observation port, the user can visually see the filling status of the internal waste bag and replace it in time, avoiding cleaning difficulties or odor leakage caused by overloading, and significantly improving the practicality of the entire cat litter box.

[0047] Referring to FIGS. 4 and 5, one end of the clean litter compartment 3 with an inlet can be pivotally connected to the litter box body 2 via a rotating shaft 33, while the other end of the clean litter compartment 3 is configured to be fixed to the litter box body 2 by a snap-fit connection. The rotating shaft can be detachably fixed to the litter box body 2 by a manual quick-release fastener 35, so that the clean litter compartment 3 can be detached from the litter box body 2 as a whole without tools. When assembling the clean litter compartment 3 and the litter box body 2, the rotating shaft 33 on the clean litter compartment 3 can be inserted into the insertion slot 24, and then the end of the clean litter compartment 3 can be snap-fitted onto the litter box body 2 along the circumferential direction of the litter box body 2 to complete the assembly of the clean litter compartment 3 and the litter box body 2. This assembly method is simple to operate and has a good fixing effect. In the state where the clean litter compartment 3 is snap-fitted and fixed to the litter box body 2, the waste collection compartment 4 is set inside the litter box body 2 and is arranged side-by-side with the clean litter compartment 3. The following is a specific structure for mounting the clean litter compartment 3 on the litter box body 2: at least one pair of rotating shafts 33 are installed on the inner side wall of the end of the clean litter compartment 3 with an inlet, and at least one pair of insertion slots 24 are provided on the litter box body 2. The width of the insertion slots 24 is greater than the width of the rotating shafts 33. When it is necessary to install the clean litter compartment 3, the end of the clean litter compartment 3 with an opening can be aligned with the installation position on the litter box body 2, and the two rotating shafts 33 are inserted into the two insertion slots 24 respectively,

thereby achieving preliminary fixation of the end of the clean litter compartment 3 with an opening. Then, the end of the clean litter compartment 3 is fitted onto the outer side of the litter box body 2 along the circumferential direction of the litter box body 2 and can be fixed to the litter box body 2 by a snap-fit connection, thereby achieving fixed installation of the clean litter compartment 3. In this embodiment, the width of the insertion slot 24 needs to be greater than the width of the rotating shaft 33. The purpose of this setting is that the insertion slot 24 can limit the rotating shaft 33 while the rotating shaft 33 can still rotate to a certain angle within the insertion slot 24, so that the clean litter compartment 3 can achieve a detachable connection under the combined action of the rotating shaft 33 and the insertion slot 24, and when the end of the clean litter compartment 3 is not snap-fitted to the litter box body 2, the clean litter compartment 3 can rotate relative to the litter box body 2 with the rotating shaft 33 as the center. This allows the end of the clean litter compartment 3 to be snap-fitted onto the litter box body 2 along the circumferential direction of the litter box body 2. The waste collection compartment 4 is detachably installed on the side of the clean litter compartment 3 near the litter box body 2. By detachably installing the waste collection compartment 4 on the clean litter compartment 3, the clean litter compartment 3 and the waste collection compartment 4 can be installed on or detached from the litter box body 2 as an integral structure, and no tools are required during the disassembly process, allowing the clean litter compartment 3 and the waste collection compartment 4 to be completely separated from the litter box body 2 quickly and easily. This allows the user to easily remove the two most easily soiled components, the clean litter compartment 3 and the waste collection compartment 4, from the litter box body 2 and place them in a sink for cleaning. This method of disassembly for cleaning allows for 360-degree, no-dead-angle washing of the clean litter compartment 3 and the waste collection compartment 4, completely removing all dirt and bacteria. This fundamentally eliminates sanitary dead corners in the waste collection compartment 4 and the clean litter compartment 3, ensuring that the litter box remains clean for a long time, providing a truly healthy toileting environment for the cat, and making the deep cleaning work for the cat owner simple and efficient.

[0048] Referring to FIG. 5, a set of detachable connection mechanisms is provided between the clean litter compartment 3 and the waste collection compartment 4. The connection mechanism includes: a mounting pin 34 provided on one of the clean litter compartment 3 or the waste collection compartment 4; and a mounting slot 48 provided on the other compartment and matching the mounting pin 34, the mounting slot 48 being configured as a guide path. Thus, by sliding the mounting pin 34 along the guide path of the mounting slot 48 and locking it into position, a detachable connection between the clean litter compartment 3 and the waste collection compartment 4 can be achieved, and accidental separation of the two during the rotation of the litter box body 2 is prevented. The mounting pin 34 and the mounting slot can be installed as follows: at least one pair of mounting pins 34 are symmetrically provided on the two side walls of the clean litter compartment 3 along the axial direction of the litter box body 2, and at least one pair of mounting slots 48 are provided on the two side walls of the waste collection compartment 4

along the axial direction of the litter box body 2. The number of mounting slots 48 matches the number of mounting pins 34, and the mounting pins 34 can be slidably installed in the mounting slots 48. The mounting slot 48 is bent from the left side of the side wall of the waste collection compartment 4 towards the center of the litter box body 2. The aperture at the opening of the mounting slot 48 is larger to facilitate the rapid sliding of the mounting pin 34 into the mounting slot 48, and setting the mounting slot 48 as an arc-shaped structure allows it to limit the mounting pin 34 that slides into the mounting slot 48, thereby improving the stability of the waste collection compartment 4 when installed on the clean litter compartment 3. In this embodiment, by inserting the mounting pins 34 on the two side walls of the clean litter compartment 3 along the axial direction of the litter box body 2 into the mounting slots 48, the waste collection compartment 4 is installed on the clean litter compartment 3. When it is necessary to remove the waste collection compartment 4 from the clean litter compartment 3, one only needs to pull the waste collection compartment 4 off the clean litter compartment 3 along the opening direction of the mounting slot 48 to remove the waste collection compartment 4 from the clean litter compartment 3. This installation method is simple to operate and can quickly fix the waste collection compartment 4 on the clean litter compartment 3, so that the clean litter compartment 3 and the waste collection compartment 4 can form an integral unit to be installed on the litter box body 2, which facilitates the rapid assembly or separation of the clean litter compartment 3 and the waste collection compartment 4 from the litter box body 2, thereby simplifying the assembly or disassembly steps of the clean litter compartment 3 and the waste collection compartment 4 with the litter box body 2.

[0049] Referring to FIG. 7, the waste collection compartment 4 is sequentially provided with an inlet area 45, a sliding area 46, and a storage area 47 from the inlet to the end. The inlet area 45 is set vertically downwards. The purpose of the vertically downward setting is that as the litter box body 2 rotates, the inlet area 45 of the waste collection compartment 4 will change from vertically downwards to vertically upwards. During this process, the waste filtered by the separation mechanism 31 will quickly flow into the waste collection compartment 4 along the vertically designed inlet area 45, so that the waste from the separation mechanism 31 entering the waste collection compartment 4 will not be blocked in the inlet area 45, improving the separation efficiency of the entire device. And during the process of the litter box body 2 rotating back to its original position, the one-way sealing device 41 will close the inlet of the waste collection compartment 4 before the waste bag falls to the inlet of the waste collection compartment 4, thereby sealing the entire waste collection compartment 4 and preventing the waste in the waste collection compartment from falling back into the litter box body 2. One end of the sliding area 46 is connected to the end of the inlet area 45. The sliding area 46 is bent from the end of the inlet area 45 towards the center of the litter box body 2, and the end of the sliding area 46 is connected to the storage area 47. By setting the sliding area 46 to be bent towards the center of the litter box body 2, it is convenient for the waste entering the inlet area 45 to quickly enter the storage area 47 along the sliding area 46 under the rotation of the litter box body 2, thereby increasing the

speed of waste movement in the waste collection compartment 4. The storage area 47 starts from the end of the sliding area 46 and has a gradually increasing diameter. The purpose of this setting is that all the waste from the sliding area 46 can enter the storage area 47, increasing the amount of waste temporarily stored in the storage area 47. The fixing clip 44 is installed in the storage area 47. Through the waste bag retaining ring 43 and the fixing clip 44, the waste bag can be effectively fixed in the waste collection compartment 4, which can effectively collect the waste entering the inlet area 45 and also prevent the waste bag from swinging in the waste collection compartment 4 with the rotation of the litter box body 2, improving the stability of the waste bag in the waste collection compartment 4.

[0050] Referring to FIGS. 6 and 7, a litter replenishing mechanism can also be installed on the litter box body 2. The litter replenishing mechanism is connected to the litter placement area 21 and is used to replenish litter into the litter placement area 21 when the litter box body 2 rotates. The litter box body 2 is provided with at least one locking slot 22, which is integrally formed by recessing inwards from the outer wall of the litter box body 2. The bottom of the locking slot 22 is provided with a through-hole 23, which is connected to the litter placement area 21. The litter replenishing mechanism is provided with a locking block 51, which can pass through the through-hole 23 and be fixed in the locking slot 22. By setting the locking block 51 and the locking slot 22, the litter replenishing mechanism can be installed in the litter box body 2. The end of the clean litter compartment 3 is provided with at least one hollow-structured positioning block 32. When the clean litter compartment 3 is installed on the litter box body 2, the positioning block 32 is inserted into the locking slot 22 and is fitted over the outer side of the locking block 51 by means of an interference fit. By providing the positioning block 32 on the clean litter compartment 3, the end of the clean litter compartment 3 can be fixed on the litter box body 2 through the synergistic action of the locking slot 22 and the locking block 51, thereby fixing the end of the clean litter compartment 3. At the same time, the positioning block 32 on the clean litter compartment 3 is fitted over the outer side of the locking block 51 by means of an interference fit, which not only fixes the end of the clean litter compartment in the locking slot 22, but also limits the locking block 51, thereby achieving synergistic fixation among the litter box body 2, the litter replenishing mechanism, and the clean litter compartment 3, and improving the stability of the litter replenishing mechanism when installed on the litter box body 2.

[0051] The litter replenishing mechanism is an independent container that can be used to pre-store new cat litter. The core function of the litter replenishing mechanism is to automatically replenish the litter lost with the waste into the litter placement area 21 after each cleaning of the litter in the litter placement area 21, thereby maintaining a reasonable depth of litter in the litter placement area 21 for a long time. At the same time, the amount of litter added by the litter replenishing mechanism is set to be greater than the amount lost. Since the capacity of the clean litter compartment 3 is fixed, the excess litter will flow into the waste collection compartment 3, covering the waste and forming the first physical barrier. Then, the

waste collection compartment 4 door will automatically close, providing a second active seal. This dual physical odor-locking solution of “covering + sealing” effectively locks in odors at the source without the need for deodorants or activated carbon packs, keeping the indoor air fresh for a long time, which is both economical and environmentally friendly.

[0052] The core function of the litter replenishing mechanism is not only to compensate for litter loss but also to achieve a gradual replacement of the litter. This clever design utilizes the synergy of structure and function: first, the structure of the separation mechanism 31 makes the inlets of the clean litter compartment 3 and the waste collection compartment 4 closely adjacent, which in itself will cause a small amount of clean litter to scatter into the waste collection compartment 4 due to inertia during the cleaning rotation. On this basis, by setting the single replenishment amount of the litter replenishing mechanism to be slightly larger than the amount of clumped litter removed in a single cleaning, the total amount of litter in the litter placement area 21 slowly increases after multiple cycles. When the total amount of litter accumulates to a certain extent, in the next cleaning rotation, this “strategically” extra clean litter will be stably diverted into the waste collection compartment 4 along with the litter scattered due to the structure, to cover the waste. It is precisely through the action of the litter replenishing mechanism adding new litter that the clean litter is prompted to enter the waste collection compartment 4, thereby discarding the contaminated old clumped litter and the excess clean litter together, achieving a gradual renewal of the entire litter system. This is an economical and clever design that can continuously maintain the cleanliness of the cat litter.

[0053] Referring to FIG. 8, the litter replenishing mechanism includes a hollow litter replenishing box 52. A flow control block 53 is installed at the bottom of the litter replenishing box 52. The flow control block 53 is provided with at least one litter replenishing channel 54. The litter replenishing channel 54 is connected to the litter replenishing box 52 through a feed inlet 542 and to the litter placement area 21 through a discharge outlet 543. The litter replenishing channel 54 defines a path from the feed inlet 542 to the discharge outlet 543. The key is that the litter replenishing channel 54 includes a metering chamber 541 formed between the feed inlet 542 and the discharge outlet 543.

[0054] To achieve a passive automatic quantitative function, the internal structure of the litter replenishing channel 54 is specially designed to form a key part as the metering chamber 541. In physical form, the metering chamber 541 appears as a significant bend, with the opening of the bend preferably facing the side of the litter replenishing box 52, i.e., presenting a “U” or “V” shaped depression. This bend constitutes the lowest part of the entire path of the litter replenishing channel 54 in the vertical direction. Crucially, both the inlet and outlet of the litter replenishing channel 54 are significantly higher than the lowest part in the vertical direction. This “high at both ends, low in the middle” topological structure forms a stable “potential energy trap” in the gravitational field, allowing the cat litter to be temporarily stored in the metering chamber 541 without overflowing, thereby

achieving quantitative containment. When the litter box body 2 is stationary, the cat litter in the litter replenishing box 52 can flow into the metering chamber 541 through the feed inlet 542 under gravity. Since the opening of the litter replenishing channel 54 faces the litter replenishing box 52 and the metering chamber 541 is a depression, the metering chamber 541 can temporarily store the cat litter flowing in through the feed inlet 542. When the litter box body 2 rotates, the litter replenishing mechanism will rotate with the litter box body 2, and the cat litter temporarily stored in the metering chamber 541 will flow into the litter placement area 21 of the litter box body 2 along the discharge outlet 543, thereby timely replenishing the consumed cat litter in the litter placement area 21. By setting the litter replenishing mechanism, automatic replenishment of litter into the litter placement area 21 can be achieved when the litter box body 2 rotates.

[0055] The litter replenishing channel 54 can be a U-shaped, V-shaped, or arc-shaped litter replenishing channel 54. The purpose of setting it as a U-shape, V-shape, or arc-shape is that when the litter box body 2 is stationary, the cat litter in the litter replenishing box 52 will naturally fall into the metering chamber 541 along the feed end of the litter replenishing channel 54 due to gravity. At this time, because the opening of the litter replenishing channel 54 faces the litter replenishing box 52 and due to the friction between the litter particles, the litter can be effectively “stuck” in the metering chamber 541, i.e., the lowest point of the litter replenishing channel 54. When the litter box body 2 rotates, the litter replenishing mechanism will also rotate with the litter box body 2, and the cat litter in the metering chamber 541 will flow into the litter placement area 21 along the discharge outlet 543, thereby achieving the replenishment of litter into the litter placement area 21. By setting the litter replenishing channel 54 as any one of a U-shape, V-shape, or arc-shape, it can be ensured that the litter replenishing mechanism only replenishes litter when the litter box is performing cleaning work (i.e., when it rotates), and there will be no unnecessary litter consumption such as replenishment when it is stationary. This allows the litter replenishing mechanism designed in this embodiment to both timely and effectively replenish litter into the litter placement area 21 while also avoiding unnecessary litter waste.

[0056] In practical application, in order to enable the litter replenishing mechanism not only to replenish litter into the litter placement area 21 but also to quantify the replenished litter during the rotation of the litter box body 2, this solution also provides another structure of the litter replenishing mechanism. Referring to FIGS. 9 and 10, this litter replenishing mechanism can not only automatically replenish litter into the litter placement area 21 when the litter box body 2 rotates, but also automatically adjust the amount of litter replenished each time the litter box rotates. Its specific structure is as follows: the litter replenishing mechanism includes a hollow litter replenishing box 52, and a fixing chamber 55 is also provided at the bottom of the litter replenishing box 52. The fixing chamber 55 can also be provided with a chamber body 551, a chamber inlet 552 connected to the litter replenishing box 52, and a chamber outlet 553 connected to the litter box body 2. One end of the chamber body 551 is connected to the chamber inlet 552, and the other end is

connected to the chamber outlet 553. Multiple flow control blocks 53 are detachably installed in the chamber body 551, and the flow control blocks 53 are installed sequentially along the length of the outlet 521 of the litter replenishing box. Each flow control block 53 is an independent structure and can be individually disassembled, replaced, and maintained. Each flow control block 53 is provided with a litter replenishing channel 54, and the two ends of the litter replenishing channel 54 are respectively connected to the chamber inlet 552 and the chamber outlet 553. The litter replenishing channel 54 is provided with a feed inlet 542 and a discharge outlet 543. The litter replenishing channel 54 defines a path from the feed inlet 542 to the discharge outlet 543. The key is that the litter replenishing channel 54 includes a metering chamber 541 formed between the feed inlet 542 and the discharge outlet 543. By setting the litter replenishing channel 54 with its opening facing the side of the litter replenishing box 52, the cat litter in the litter replenishing box 52 can flow into the metering chamber 541 through the chamber inlet 552 and the feed inlet 542 when the litter box body 2 is stationary. The metering chamber 541 is used to temporarily store the inflowing litter. And the litter temporarily stored in the metering chamber 541 will flow into the litter box body 2 along the discharge outlet 543 and the chamber outlet 553 when the litter box body 2 rotates. Thus, by setting the litter replenishing mechanism, automatic replenishment of litter into the litter placement area 21 is achieved when the litter box body 2 rotates.

[0057] The chamber inlet 552 and the chamber outlet 553 are provided on both sides of the chamber body 551. In this embodiment, the chamber inlet 552 is provided at the bottom of the litter replenishing box 52, and the height of the chamber inlet 552 in the vertical direction is higher than the height of the chamber outlet 553 in the vertical direction. The chamber body 551 can be a chamber body 551 with a rectangular cross-section. The flow control block 53 can also be a rectangular structure. The height of the chamber outlet 553 is equal to the height of the flow control block 53, and the height of the chamber body 551 is slightly less than the height of the flow control block 53. Through this setting, multiple flow control blocks 53 can all be inserted into the chamber body 551 through the chamber outlet 553. And by setting the height of the chamber outlet 553 to be equal to the height of the flow control block 53, after the flow control block 53 is installed in the chamber body 551 through the chamber outlet 553, the chamber body 551 can clamp the flow control block 53, thereby achieving the purpose of fixing the flow control block 53.

[0058] In this solution, by setting multiple flow control blocks 53, it is possible in actual use to adjust the amount of litter replenished by the entire litter replenishing mechanism during a single rotation of the litter box body 2 by adjusting whether the feed inlet 542 of the litter replenishing channel 53 on each flow control block 53 is aligned with the chamber inlet 552. The specific adjustment process is as follows: before installing the flow control blocks 53, a portion of the flow control blocks 53 can have their litter replenishing channels 54 set to face downwards according to requirements (i.e., making the feed inlet 542 of the litter replenishing channel 54

not connected to the chamber inlet 552). These unconnected flow control blocks 53 cannot transport the cat litter from the litter replenishing box 52 to the litter placement area 21 through the litter replenishing channel 54, thereby achieving the adjustment of the single replenishment amount of the litter replenishing mechanism. Therefore, in actual use, the user only needs to adjust the number of litter replenishing channels 54 on the multiple flow control blocks 53 that are connected to the chamber inlet 552 according to actual needs to adjust the single replenishment amount of the entire litter replenishing mechanism.

[0059] In this embodiment, referring to FIG. 9, the locking blocks 51 can be provided on the top of the litter replenishing box 52, and there can be two locking blocks 51, which can be symmetrically arranged along the length of the litter replenishing box 52. The litter replenishing box 52 is also provided with an openable door, which is used to open the litter replenishing box 52. By setting the door, the user can replenish new cat litter into the litter replenishing box 52 by opening the door.

[0060] The following describes the litter replenishing operation of the litter replenishing mechanism provided in this solution: before assembling the litter replenishing mechanism, multiple flow control blocks 53 can be inserted into the chamber body 551 in sequence. When placing the flow control blocks 53, the number of flow control blocks 53 whose litter replenishing channel 54's feed inlet 542 is connected to the chamber inlet 552 and whose discharge outlet 543 is connected to the chamber outlet 553 can be controlled according to the user's replenishment requirements. This portion of the flow control blocks 53 can replenish litter into the litter placement area 21 when the litter box body 2 rotates. The openings of the litter replenishing channels 54 of the other flow control blocks 53 are set to face downwards, so that the feed inlets 542 of these flow control blocks 53 are not connected to the chamber inlet 552, thus preventing these flow control blocks 53 from replenishing litter into the litter box body 2 even when the litter box body 2 rotates. It can be understood that since the litter replenishing mechanism and the litter box body 2 are detachably assembled, in actual use, if the user feels that the replenishment amount of the litter replenishing mechanism is too much or too little, the litter replenishing mechanism can be detached from the litter box body 2, and by taking out the flow control blocks 53 from the chamber body 551 and adjusting the number of litter replenishing channels 54 on the multiple flow control blocks 53 that are connected to the chamber inlet 552, the amount of litter replenished by the litter replenishing mechanism in one rotation of the litter box body 2 can be adjusted. After adjusting the flow control blocks 53, the litter replenishing mechanism is installed in the litter box body 2, and new cat litter is placed in the litter replenishing box 52. At this time, when the litter box body 2 is stationary, the cat litter in the litter replenishing box 52 can enter the litter replenishing channel 54 from the chamber inlet 552 under the influence of gravity and fall into the metering chamber 541, i.e., the lowest point of the litter replenishing channel 54, along the litter replenishing channel 54. When the litter box body 2 rotates, the litter replenishing mechanism will also rotate with the litter

box body 2, and the cat litter temporarily stored in the metering chamber 541 will flow into the litter placement area 21 from the chamber outlet 553 along the litter replenishing channel, thereby achieving the purpose of the litter replenishing mechanism automatically replenishing litter as the litter box body 2 rotates.

Embodiment 2 [0061] This embodiment makes some structural optimizations and changes based on Embodiment 1. The basic components such as the base 1, litter box body 2, etc., are the same as in Embodiment 1 and will not be described again here. The main differences between this embodiment and Embodiment 1 lie in the layout and installation method of the clean litter compartment 3 and the waste collection compartment 4, as well as the related cooperating structures.

[0062] In this embodiment, referring to FIGS. 11 to 12, the inlets of the clean litter compartment 3 and the waste collection compartment 4 face upwards and are respectively connected to the litter placement area 21. When the litter box body 2 rotates for cleaning, the litter and cat feces clumps in the litter placement area 21 will roll along the inner wall together, eventually reaching the upper inlet area of the clean litter compartment 3 and the waste collection compartment 4.

[0063] The advantage of this design is that the one-way door is set at the upper inlet of the waste collection compartment 4. This allows the cat feces clumps to fall into the waste bag below after passing through the one-way door and hang down to the bottom of the waste collection compartment 4 under gravity. This is different from the structure in Embodiment 1 where the one-way door is located at the end of the waste collection compartment 4. In the latter structure, the waste bag containing cat feces will sag under gravity and directly press against the one-way door at the bottom. As the collected feces increase, there is a risk of the one-way door being blocked and unable to open and close normally, leading to operational failure. In this embodiment, setting the one-way door at the top reduces the risk of blockage and ensures the long-term reliability of the cleaning work.

[0064] Although in this design, the openings of the clean litter compartment 3 and the waste collection compartment 4 are farther from the litter placement area 21, and the litter and cat feces clumps need to roll a longer distance, which may increase the risk of the inner wall of the litter box body 2 getting dirty. However, the unique feature of this solution is that this rolling process is carried out with the litter and cat feces clumps together before they are separated. Compared to existing solutions where only the cat feces clumps roll after the litter is separated, the inner wall in this solution is less likely to be directly contaminated with cat feces. Even if there is a small amount of contamination, the subsequent rolling of clean litter can play a role in cleaning and carrying away the attached matter, thus more effectively keeping the inner wall of the litter box clean and avoiding odor generation.

[0065] Specifically, referring to FIG. 13, the end of the clean litter compartment 3 is provided with a rotating shaft through-hole 36 and is detachably fixed to the litter box body 2 by a rotating shaft 33 and a manual quick-release fastener 35. This structure allows the clean litter compartment 3 to rotate and open around this

rotating shaft. When it is necessary to replace the waste bag for collecting cat feces, the user can conveniently flip the clean litter compartment 3 upwards to open it, thereby completely exposing the upper opening of the waste collection compartment 4, which greatly facilitates the replacement of the waste bag. At the same time, the design of the manual quick-release fastener 35 allows the user to quickly detach the entire clean litter compartment 3 (including its front filter screen 31) from the litter box body 2 without any tools, which is convenient for thorough cleaning and is more convenient and efficient than existing products.

[0066] To ensure the stability of the clean litter compartment 3 in the closed state, its front part is locked to the litter box body 2 by a locking mechanism. To avoid obstructing the rolling path of the litter and cat feces clumps, this locking mechanism is cleverly set on both sides of the drum, avoiding the central area. The locking mechanism is preferably a push-pull latch mechanism, and its structure is designed to be as thin as possible to reduce the impact on the rolling of materials. At the same time, a protective shell is provided on the back of the locking mechanism to protect the entire mechanism, effectively preventing litter from leaking to the outside from gaps and ensuring a clean use environment.

[0067] In this embodiment, the waste collection compartment 4 is fixed on the litter box body 2. When the clean litter compartment 3 is closed, it covers the top of the waste collection compartment 4, forming a sealing mechanism to ensure that the waste bag and cat feces do not overflow to the outside. When the clean litter compartment 3 is opened, the upper part of the waste collection compartment 4 is an opening mechanism, which is convenient for replacing the waste bag. A one-way door fixing frame 49 is installed at the front of the waste collection compartment 4, and a one-way door is installed on the one-way door fixing frame 49 to control the one-way passage of cat feces. A retaining groove 25 is provided at the rear of the one-way door fixing frame 49 for installing the waste bag retaining ring 43. When replacing the waste bag, the user can pull out the waste bag retaining ring 43 from the retaining groove 25, put on the waste bag, and then insert it into the retaining groove 25 from top to bottom. When the clean litter compartment 3 is closed, the waste bag retaining ring 43 can be firmly pressed and fixed to prevent it from falling off during rotation. After collecting the cat feces, the waste bag can be easily replaced by repeating the above steps.

[0068] In this embodiment, the litter replenishing hopper 5 of the litter replenishing device is installed at the lower part of the clean litter compartment 3. When the clean litter compartment 3 is opened by rotating around the rotating shaft, the opening of the litter replenishing hopper 5 will be exposed, which is convenient for the user to add new cat litter. To prevent litter from leaking during daily use (especially when the litter box body 2 is rotating), the opening is sealed with a cover. The litter replenishing mechanism is installed at the lower part of the litter replenishing box 52. Its working principle and structure can refer to the method in Embodiment 1, and it operates normally when the litter box body 2 rotates, achieving automatic and quantitative litter replenishment.

[0069] The basic principles, main features, and advantages of the present invention have been described above. Those skilled in the art should understand that the present invention is not limited by the above embodiments. The above embodiments and the description in the specification are only for illustrating the principles of the present invention. Various changes and improvements can be made to the present invention without departing from the spirit and scope of the invention. These changes and improvements all fall within the scope of the present invention as claimed. The protection scope of the present invention is defined by the appended claims and their equivalents.

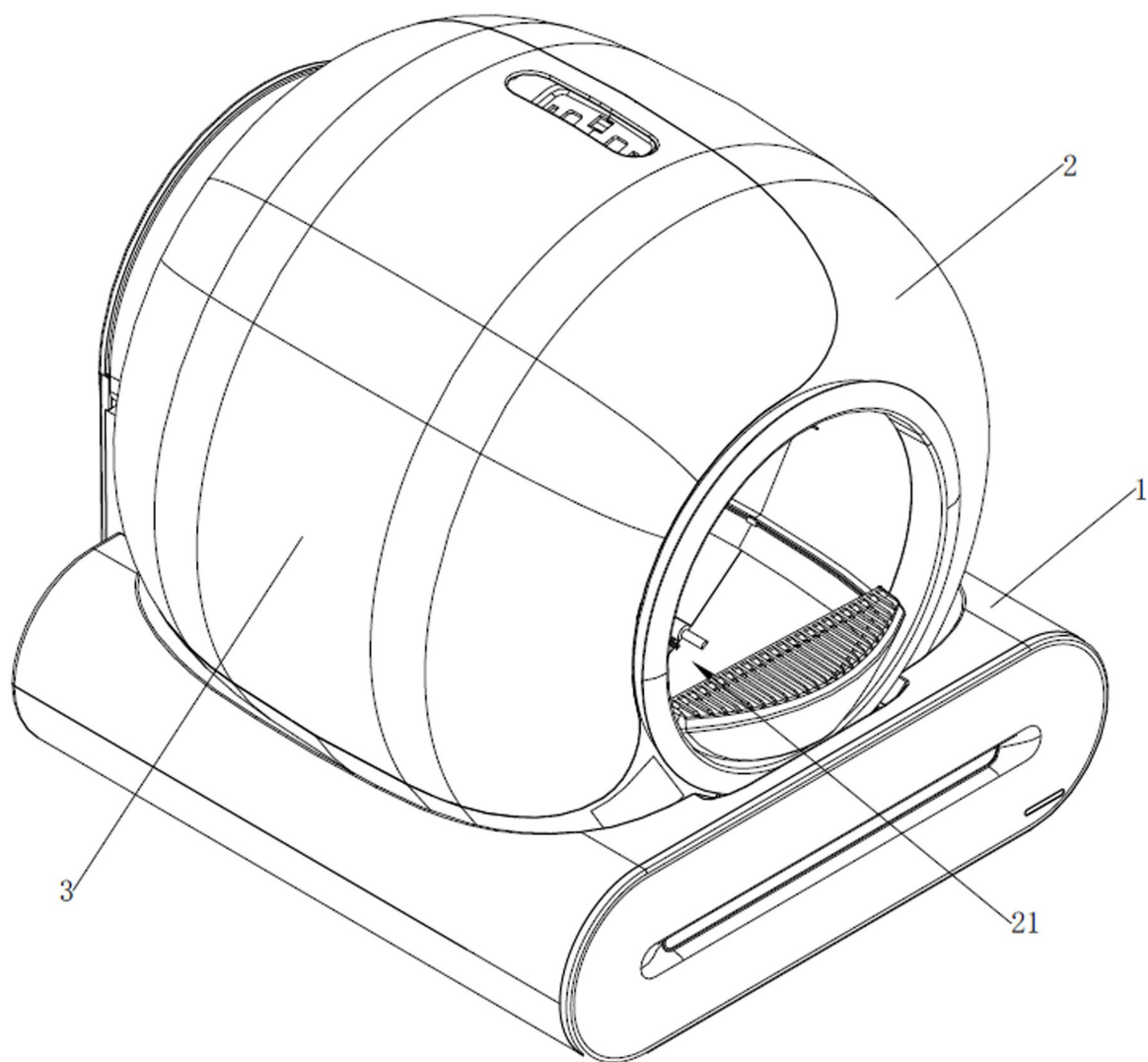


图1

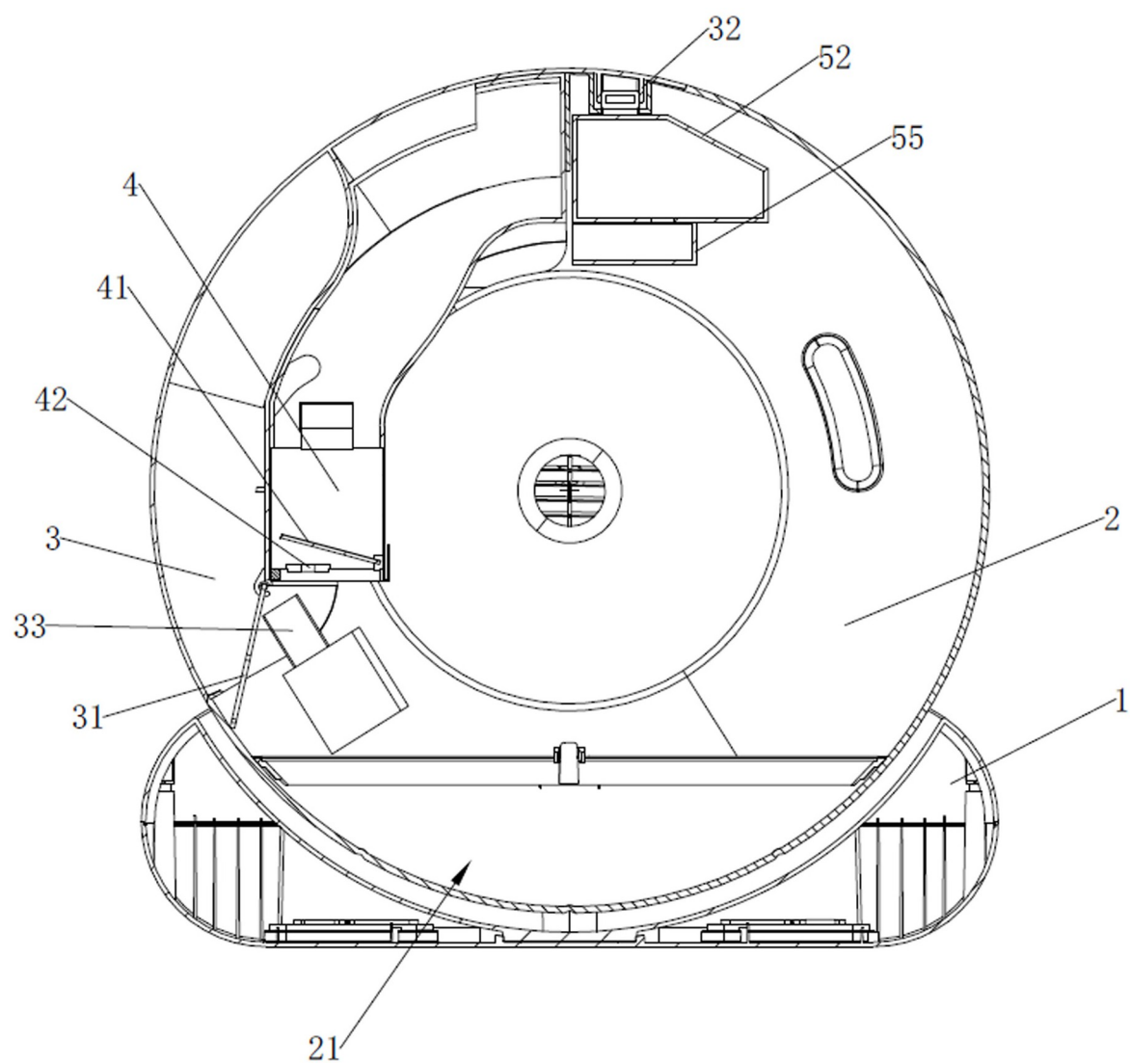


图2

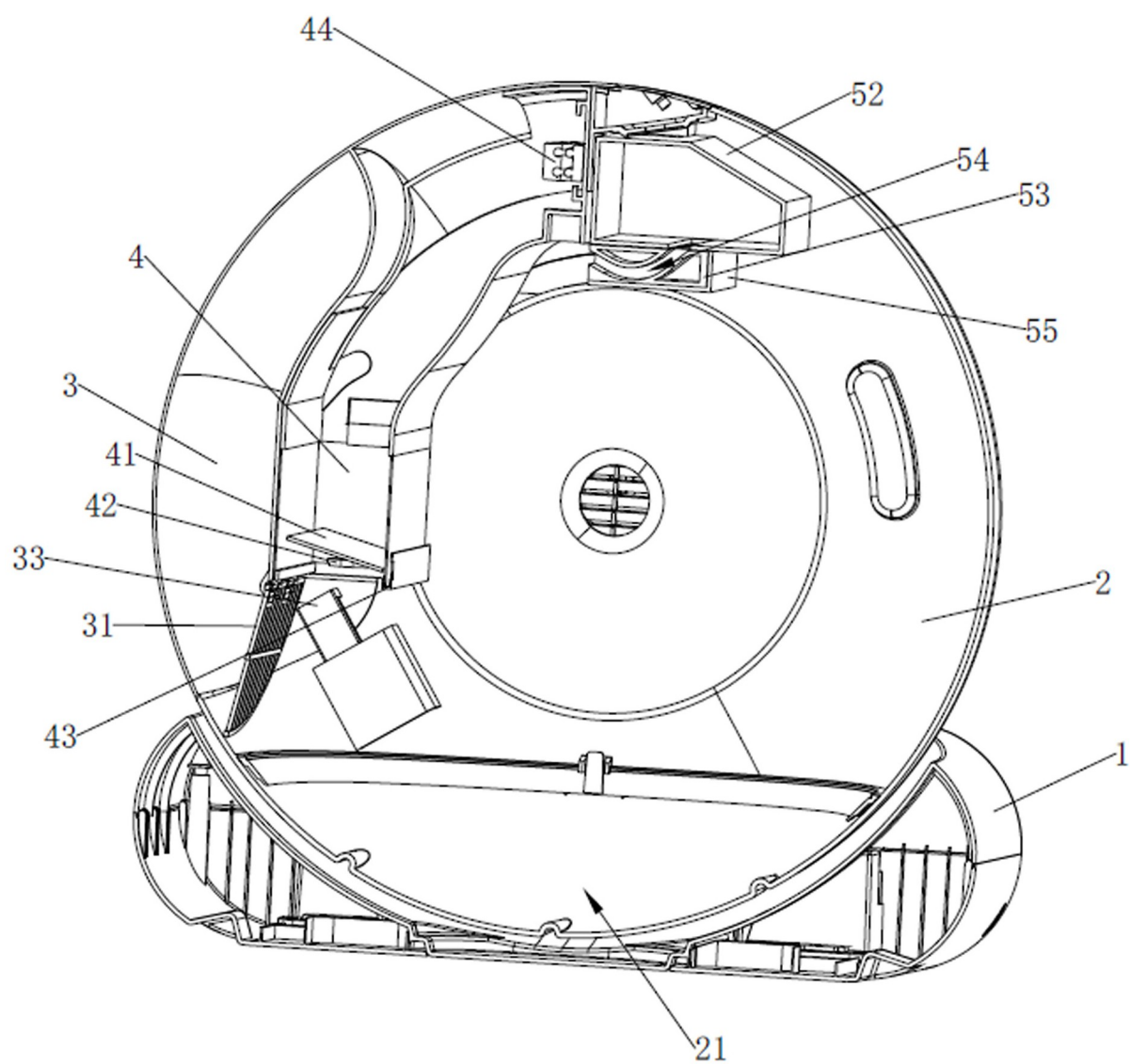


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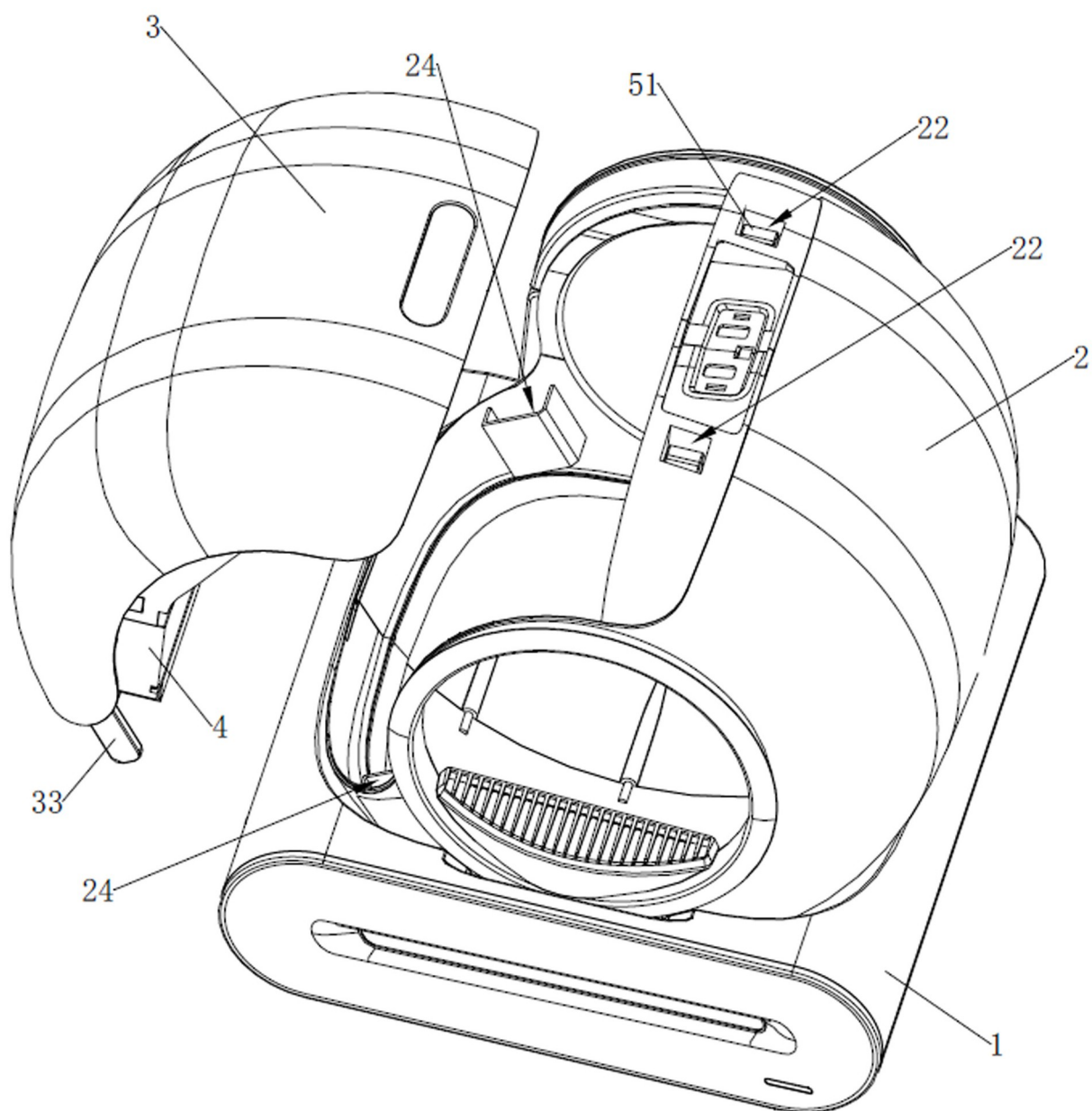


图4

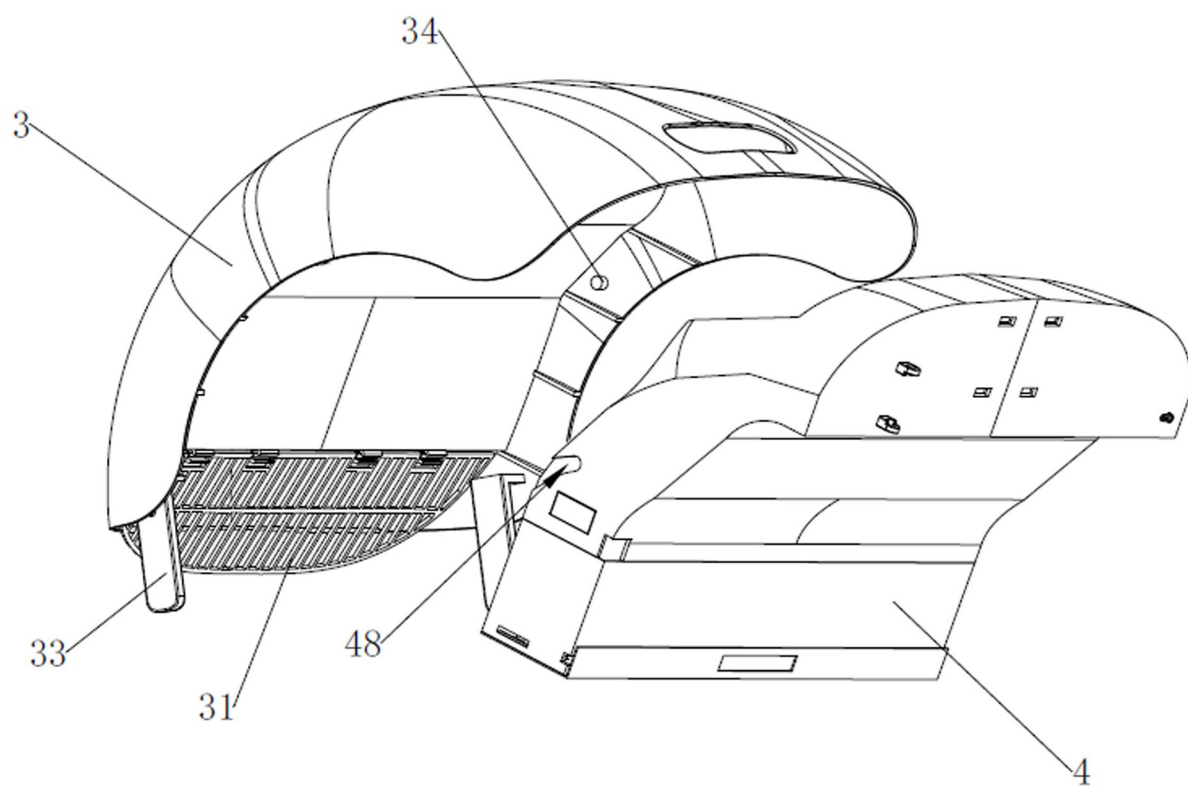


图5

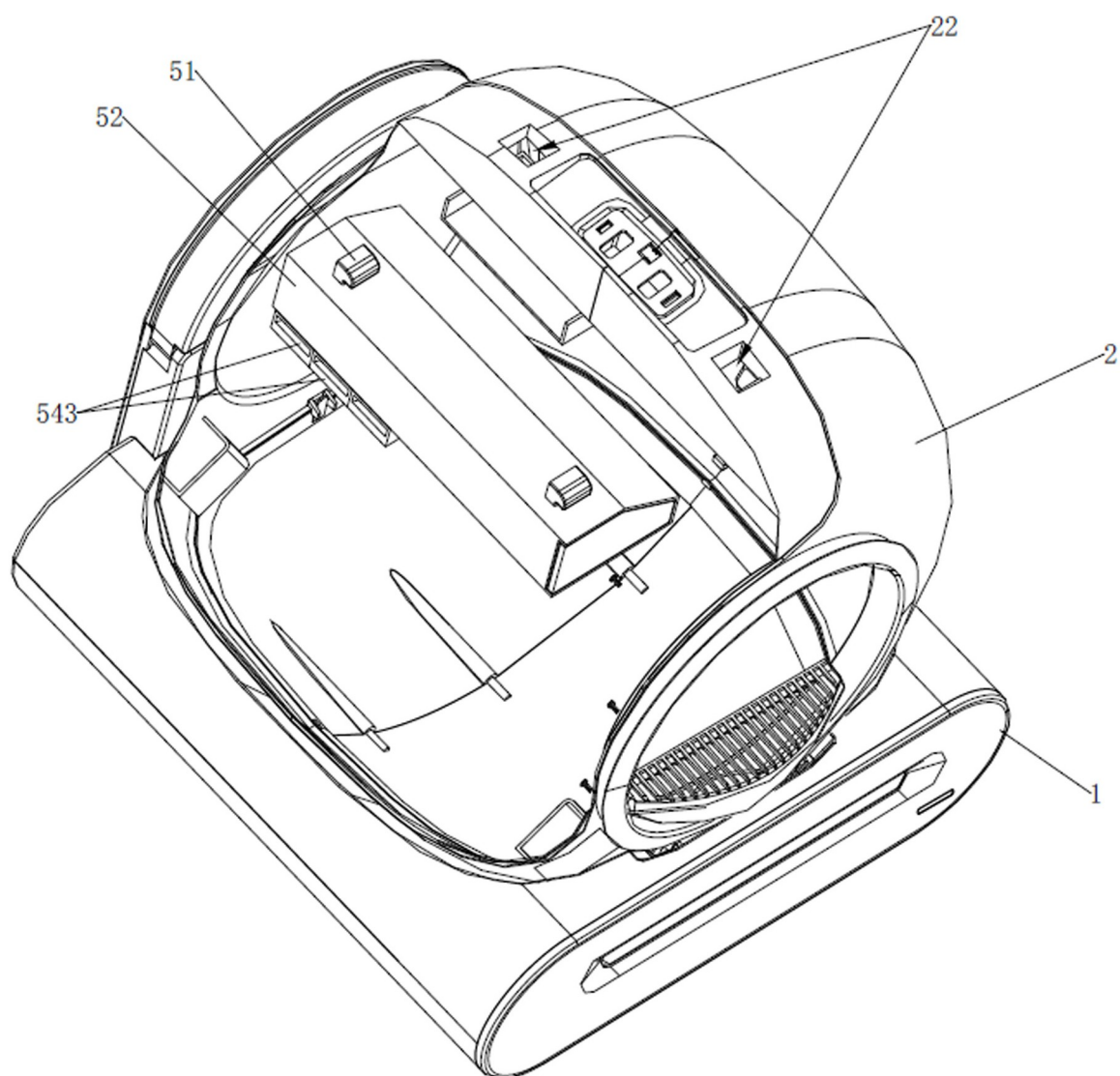


图6

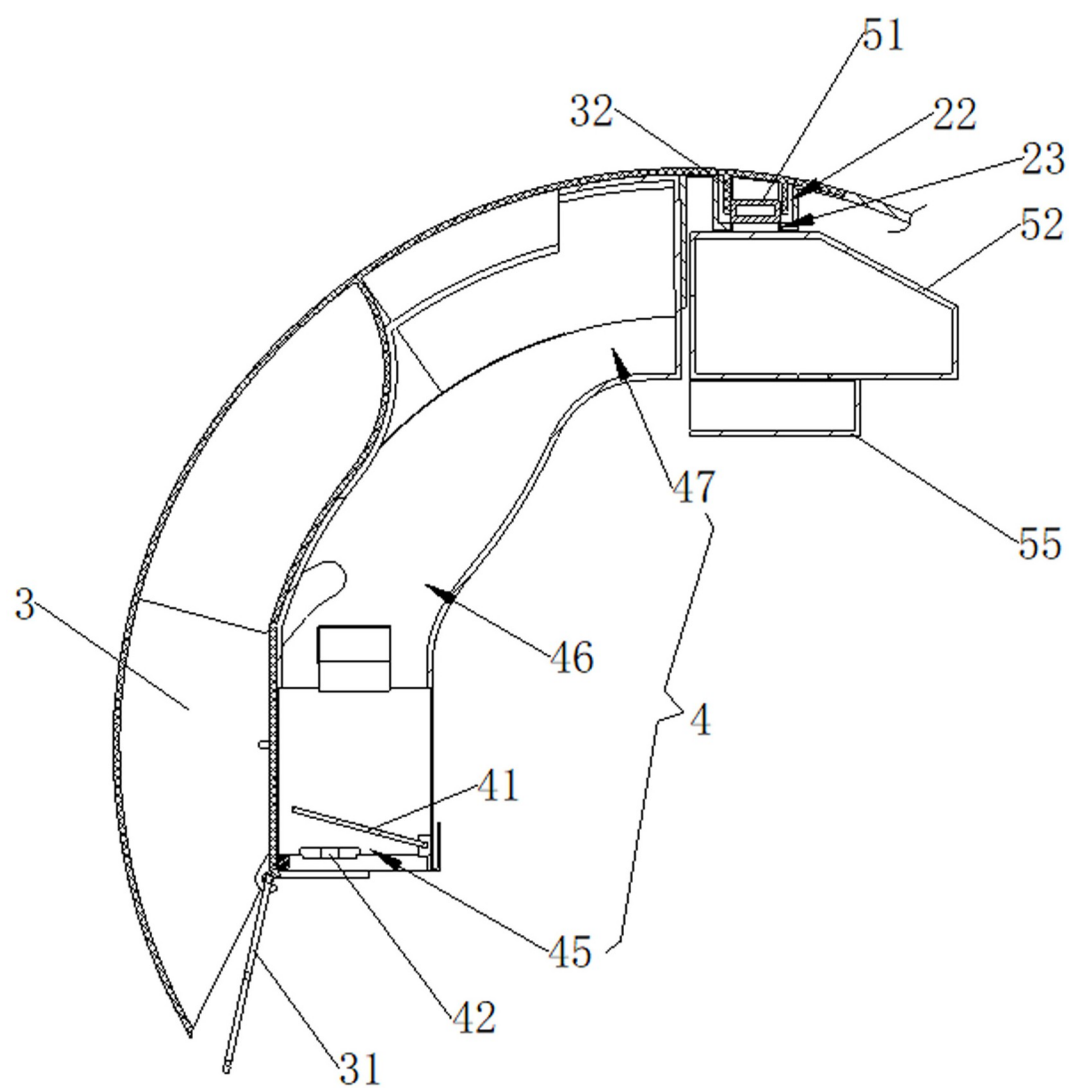


图7

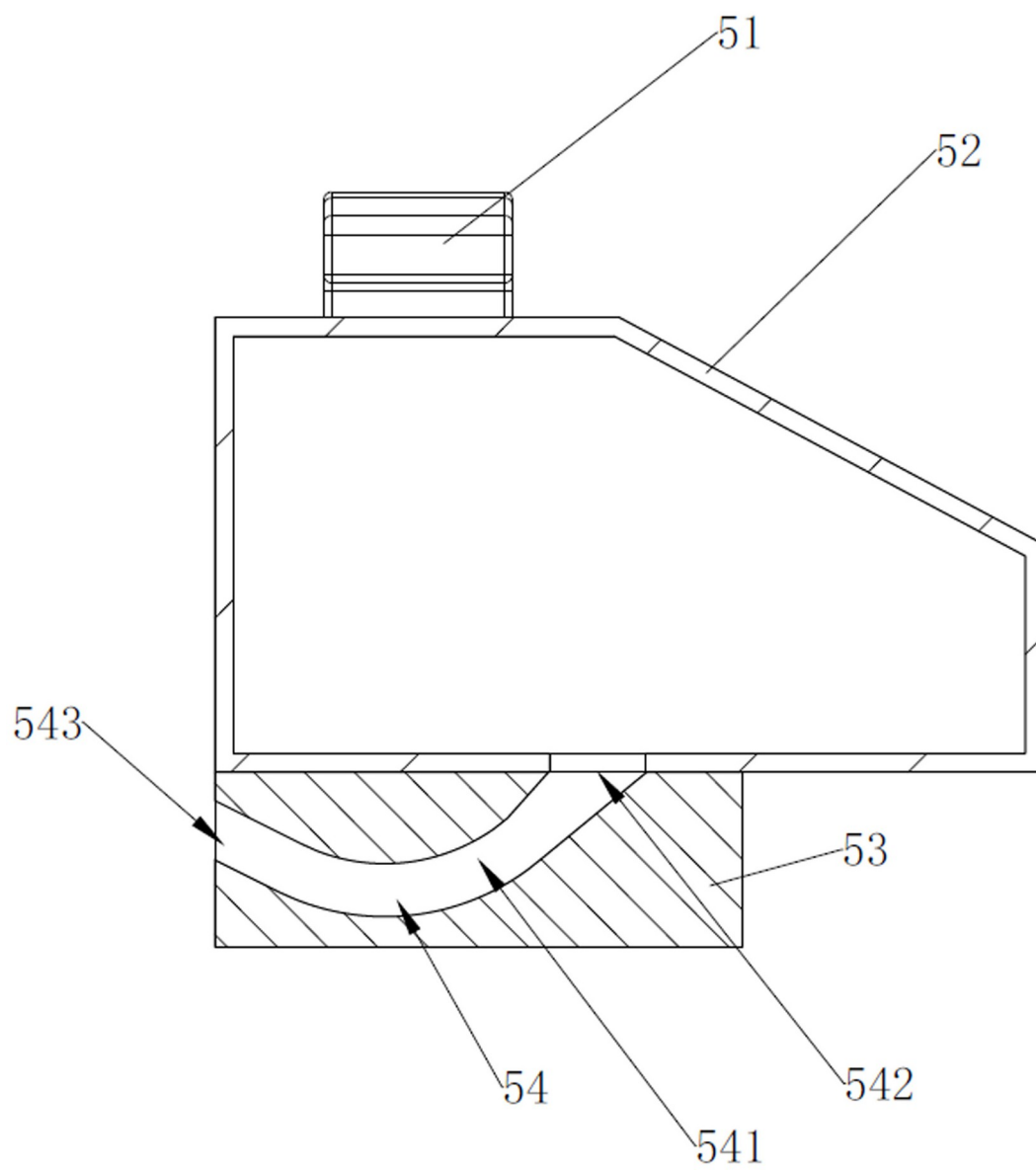


图8

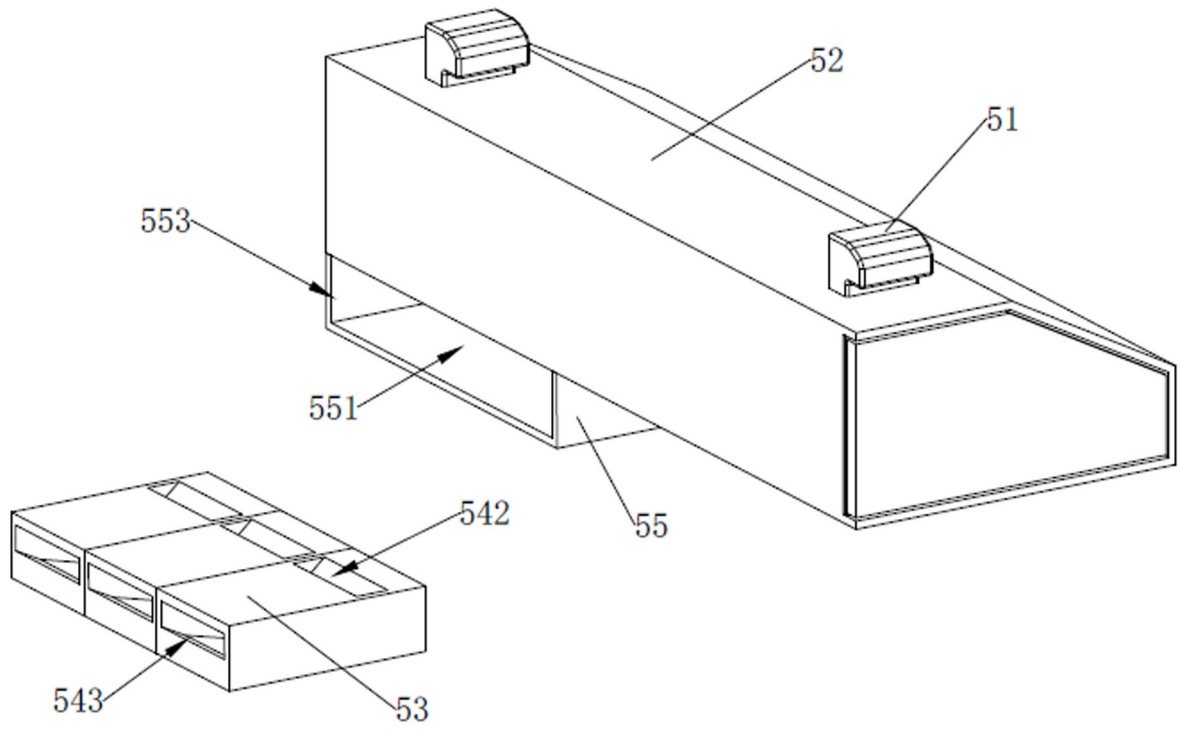


图9

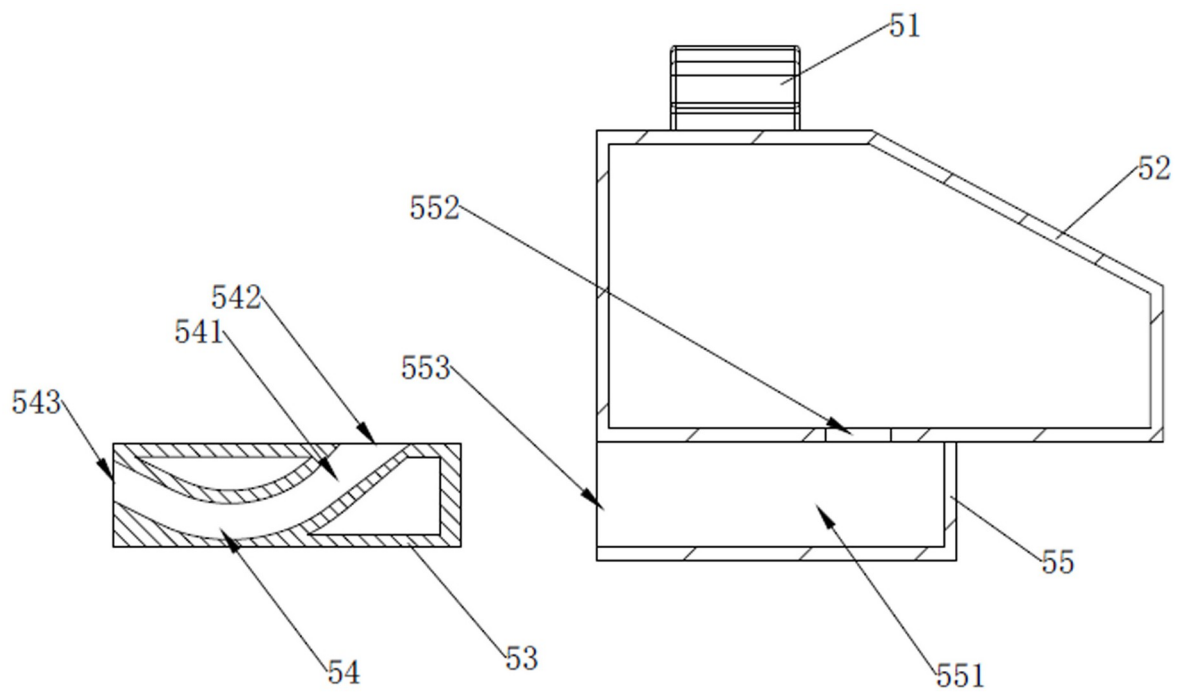


图10

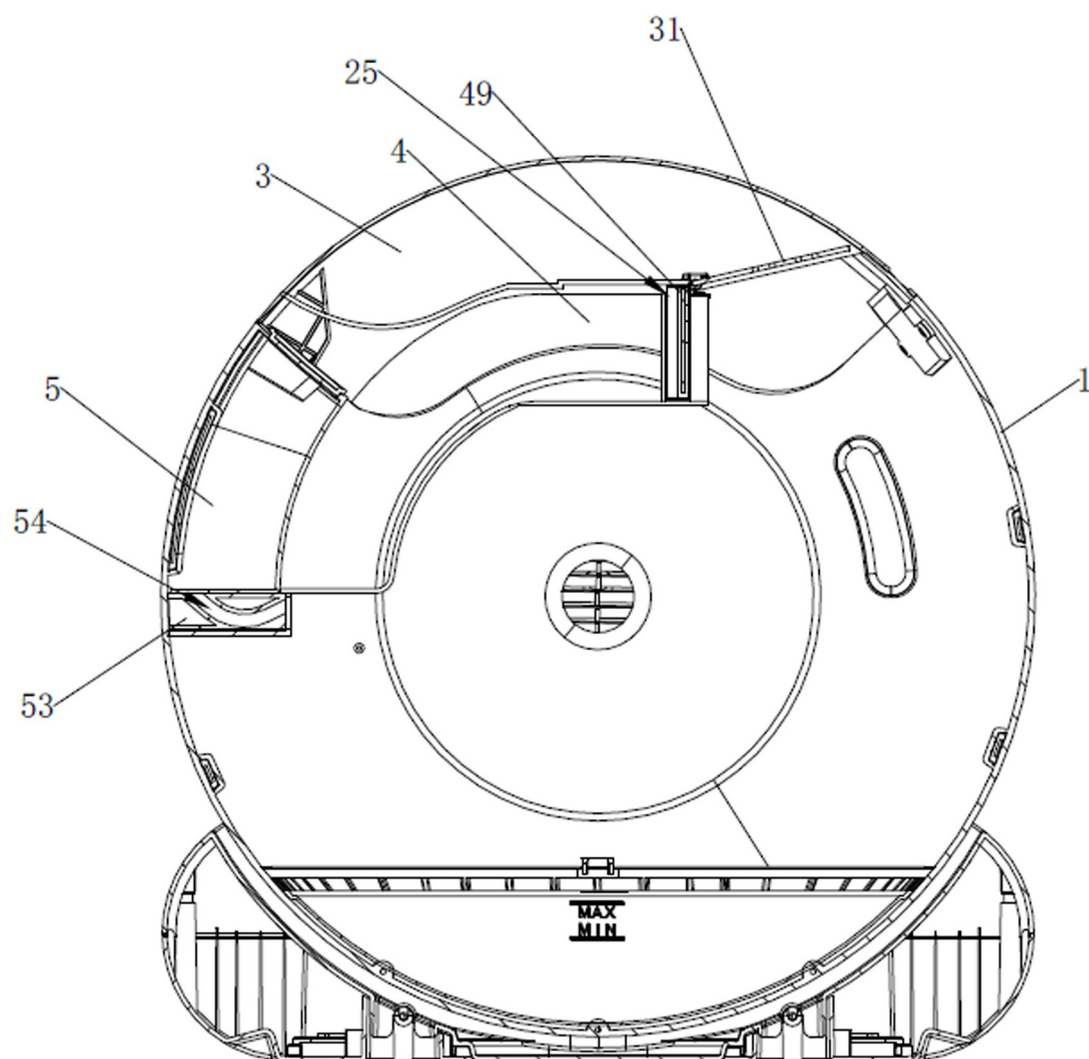


图11

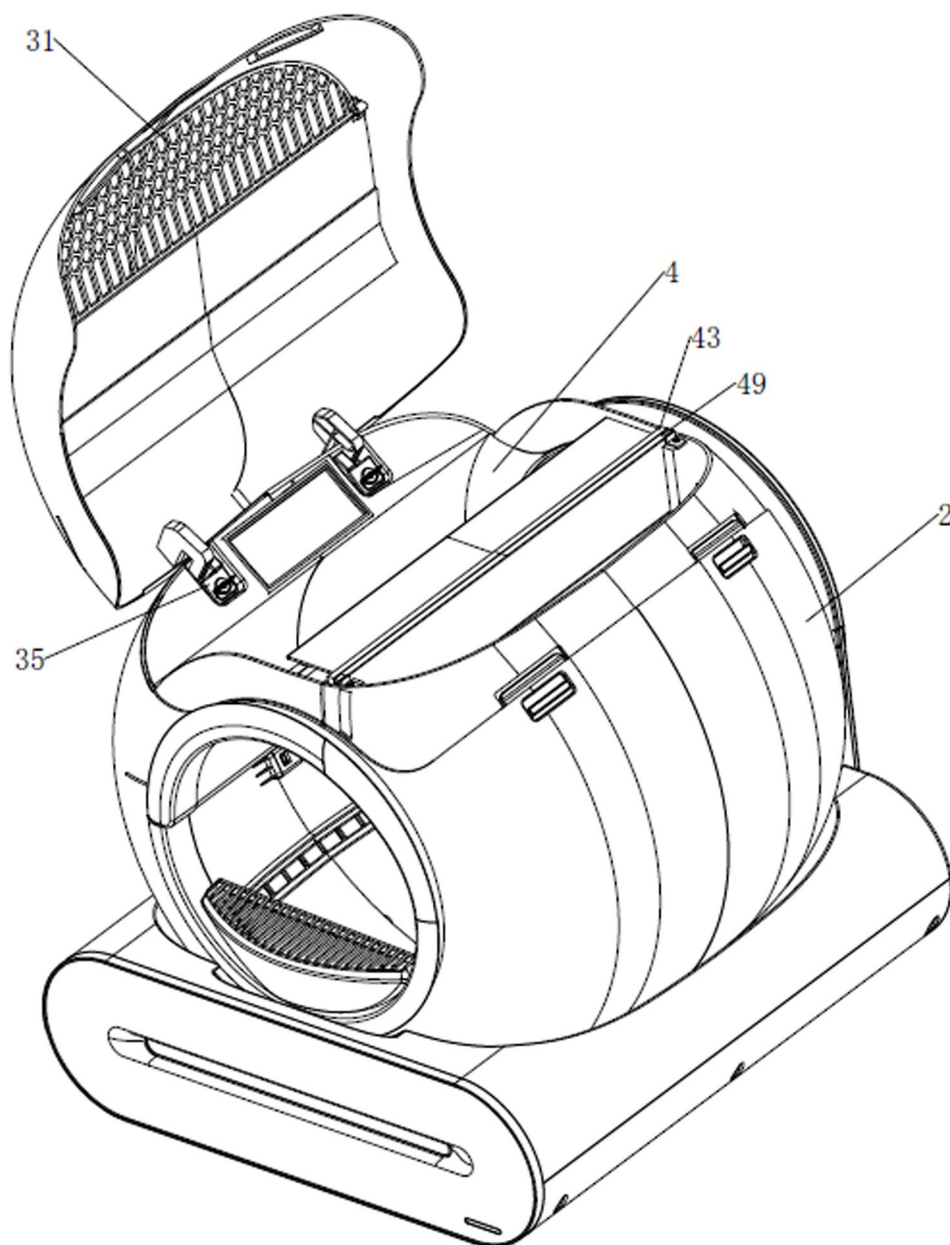


图12

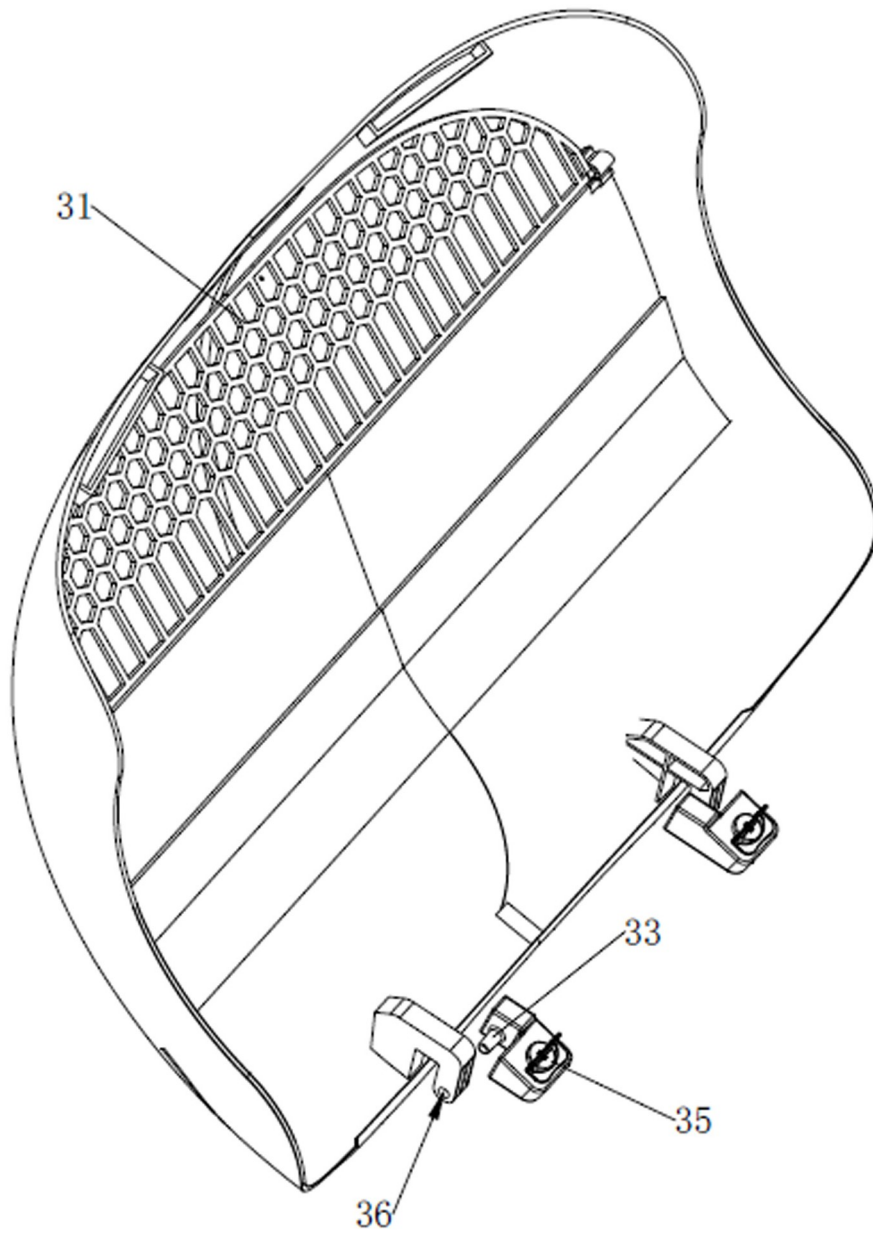


图13