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[12] Utility Model

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[73] Applicant: Wang Xin
Address: Fuzhou Ninestars Electronics Co., Ltd., No. 47, Pushangyuan, Jinshan Industrial Zone, Fuzhou City, Fujian Province, 350008
[72] Inventor: Wang Xin, Chen Jiangqun, Yang Xiujin
[74] Agent: Fuzhou Yuanchuang Patent and Trademark Agency Co., Ltd. 35100
Attorney: Cai Xuejun
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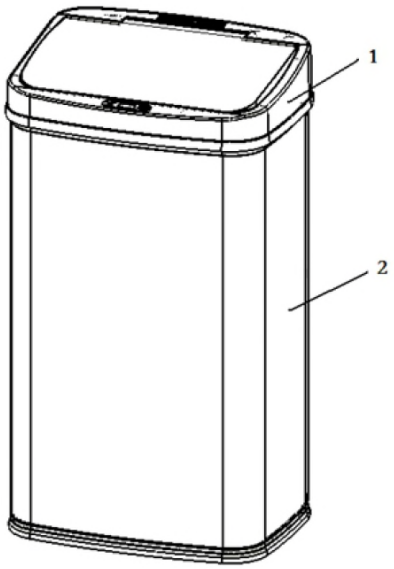
[54] Name of the Utility Model

WATERPROOF SENSING TRASH CAN

[57] Abstract

The present utility model relates to a waterproof sensing trash can, including an upper can body and a lower can body. The upper can body includes an annular middle body seat buckled on an lower can body and an annular covering housing buckled on the middle body seat, a can cover is hinged to the annular covering housing, the can cover is hinged to the annular covering housing by using a rotating shaft fixedly connected under the can cover, two ends of the rotating shaft extend into inner cavities of the annular covering housing, one end of the rotating shaft is fixedly connected to a sector gear, a sensing opening-closing apparatus is disposed in an inner cavity formed between the middle body seat and the annular covering housing, the sensing opening-closing apparatus includes a sensor, a circuit board, a battery box, a motor, and a transmission mechanism, and the motor is transmission-connected to the sector gear by using the transmission mechanism The waterproof sensing trash can has a compact structure, a proper design, is convenient to produce and install, and has good waterproof, moisture-proof, and corrosion-proof performance, thereby greatly improving reliability and a service life of the sensing trash can.



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What is claimed is:

1. A waterproof sensing trash can, comprising: an upper can body and a lower can body, wherein the upper can body comprises an annular middle body seat buckled on a lower can body and an annular covering housing buckled on the middle body seat, a can cover is hinged to the annular covering housing, the can cover is hinged to the annular covering housing by using a rotating shaft fixedly connected under the can cover, two ends of the rotating shaft extend into inner cavities of the annular covering housing, one end of the rotating shaft is fixedly connected to a sector gear, a sensing opening-closing apparatus is disposed in an inner cavity formed between the middle body seat and the annular covering housing, the sensing opening-closing apparatus comprises a sensor, a circuit board, a battery box, a motor, and a transmission mechanism, and the motor is transmission-connected to the sector gear by using the transmission mechanism.

2. The waterproof sensing trash can according to claim 1, wherein the sensor is disposed on a front side of the middle body seat, the circuit board is disposed under the sensor, the transmission mechanism is a gear reducer, and the motor is disposed on a rear side of the middle body seat and is transmission-connected to the sector gear by using the gear reducer, to drive the can cover to open and close.

3. The waterproof sensing trash can according to claim 2, wherein a mounting hole capable of allowing the sensor and a switch on the circuit board to extend out is provided on the annular covering housing.

4. The waterproof sensing trash can according to claim 1, wherein a torsion spring is disposed at the other end of the rotating shaft.

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WATERPROOF SENSING TRASH CAN

TECHNICAL FIELD

[0001] The present utility model relates to a waterproof sensing trash can.

BACKGROUND

[0002] Existing sensing trash cans have relatively poor waterproof, moisture-proof, and corrosion-proof performance. During use, the sensing trash can is inevitably encountered with garbage containing water. When the garbage is put into the trash can, water is easily splashed onto the trash can. In addition, the garbage in the trash can releases moisture and corrosive gases that corrode a circuit board and mechanical components on the sensing trash can, thereby greatly shortening a service life of the sensing trash can. For example, in the patent "Intelligent Automatic Flip Garbage Can" with the application number 03217227.3, a can cover is opened by using a transmission rod, one end of the transmission rod is connected to the can cover, and the other end is connected to a gear. This structure cannot isolate the gear from internal garbage storage space of the trash can, resulting in relatively poor waterproof, moisture-proof, and corrosion-proof performance.

SUMMARY

[0003] In view of this, an objective of the present utility model is to provide a waterproof sensing trash can that has a compact structure, a proper design, a stable and reliable transmission mechanism, and good waterproof, moisture-proof, and corrosion-proof performance.

[0004] The present utility model is implemented by using the following solutions: A waterproof sensing trash can is provided, including an upper can body and a lower can body. The upper can body includes an annular middle body seat buckled on a lower can body and an annular covering housing buckled on the middle body seat, a can cover is hinged to the annular covering housing, the can cover is hinged to the annular covering housing by using a rotating shaft fixedly connected under the can cover, two ends of the rotating shaft extend into inner cavities of the annular covering housing, one end of the rotating shaft is fixedly connected to a sector gear, a sensing opening-closing apparatus is disposed in an inner cavity formed between the middle body seat and the annular covering housing, the sensing opening-closing apparatus comprises a sensor, a circuit board, a battery box, a motor, and a transmission mechanism, and the motor is transmission-connected to the sector gear by using the transmission mechanism.

[0005] Further, the sensor is disposed on a front side of the middle body seat, the circuit board is disposed under the sensor, the transmission mechanism is a gear reducer, and the motor is disposed on a rear side of the middle body seat and is transmission-connected to the sector gear by using the gear reducer, to drive the can cover to open and close.

[0006] Further, a mounting hole capable of allowing the sensor and a switch on the circuit board to extend out is provided on the annular covering housing.

[0007] Further, a torsion spring is disposed at the other end of the rotating shaft.

[0008] Compared with the prior art, the present utility model has the following beneficial effects: The waterproof sensing trash can has a compact structure, a proper design, and is convenient to produce and install. A transmission component, a power supply component, and a control component are all wrapped in isolation space, and are completely isolated from a garbage storage portion of the trash can. The trash can has good waterproof, moisture-proof, and corrosion-proof performance during use, thereby greatly improving reliability and a service life of the sensing trash can. In addition, gear transmission has advantages of stable transmission, reliable operation, high transmission efficiency, and a long service life.

BRIEF DESCRIPTION OF THE DRAWINGS

[0009] FIG. 1 is a schematic diagram of a structure according to an embodiment of the present utility model;

[0010] FIG. 2 is a diagram showing an upper can body and a lower can body separated from each other according to an embodiment of the present utility model;

[0011] FIG. 3 is a schematic diagram of a structure of an upper can body according to an embodiment of the present utility model;

[0012] FIG. 4 is a schematic diagram of a structure of an upper can body from which an annular covering housing is removed according to an embodiment of the present utility model;

[0013] FIG. 5 is a schematic diagram of a transmission mechanism according to an embodiment of the present

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utility model;

[0014] FIG. 6 is a rear view of an upper can body according to an embodiment of the present utility model; and

[0015] FIG. 7 is a partial sectional view of an upper can body in a left view according to an embodiment of the present utility model.

[0016] Descriptions of the numbers in the figure are as follows: 1-upper can body 2-lower can body 10-can cover 11-annular covering housing 12-middle body seat 13-battery box 14-gear reducer 15-motor 16-sector gear 17-rotating shaft 18-torsion spring 19-circuit board 20-sensor.

DETAILED DESCRIPTION

[0017] To make objectives, technical solutions, and advantages of the present utility model clearer, the following further describes the present utility model in detail with reference to the specific embodiments and related accompanying drawings.

[0018] A waterproof sensing trash can is provided, including an upper can body 1 and a lower can body 2, where the upper can body 1 includes an annular middle body seat 12 buckled on a lower can body 2 and an annular covering housing 11 buckled on the middle body seat 12, a can cover 10 is hinged to the annular covering housing 11, the can cover 10 is hinged to the annular covering housing 11 by using a rotating shaft 17 fixedly connected under the can cover 10, two ends of the rotating shaft 17 extend into inner cavities of the annular covering housing 11, one end of the rotating shaft 17 is fixedly connected to a sector gear 6, a sensing opening-closing apparatus is disposed in an inner cavity formed between the middle body seat 12 and the annular covering housing 11, the sensing opening-closing apparatus includes a sensor 20, a circuit board 19, a battery box 13, a motor 15, and a transmission mechanism, and the motor 15 is transmission-connected to the sector gear 6 by using the transmission mechanism. All sensing opening-closing apparatuses are wrapped in the annular covering housing 11, and are isolated from garbage storage space. The sensing opening-closing apparatus has good waterproof, moisture-proof, and corrosion-proof performance, thereby greatly improving reliability and a service life of the sensing trash can.

[0019] The sensor 20 is disposed on a front side of the middle body seat 12. The circuit board 19 is disposed under the sensor 12. A mounting hole capable of allowing the sensor 20 and a switch on the circuit board 19 to extend out is provided on the annular covering housing 11. The sensor 20 and the switch on the circuit board 19 are embedded in the mounting hole and protrude upward.

[0020] The motor 15 is disposed on an inner rear side of the annular covering housing 11 and drives, by using the sector gear 6, the can cover 10 to open and close. The battery box 13 is electrically connected to the circuit board 19, the circuit board 19 is electrically connected to the motor 15, and the sensor 20 controls, by using the circuit board 19, the motor 15 to rotate. An opening of the battery box 13 is disposed on a rear side surface of the annular covering housing 11, away from garbage storage space, thereby effectively preventing moisture and corrosive gases in the trash can from penetrating into the battery box 13 and corroding metal electrodes in contact with a battery.

[0021] In this embodiment, the transmission mechanism is a gear reducer 14, the motor 15 is connected to the sector gear 16 by using the reducer 14, and the sector gear 16 has a small volume and saves space. The sector gear 16 is transmission-connected to a final gear of the reducer 14, and a primary gear of the reducer 14 is transmission-connected to the motor 15. Gear transmission has advantages of stable transmission, reliable operation, high transmission efficiency, small space occupied, a long service life, and the like.

[0022] In this embodiment, a torsion spring 18 is disposed at the other end of the rotating shaft 17. A function of the torsion spring 18 is to offset some of the gravity of the can cover 10, so that the motor 15 can open the can cover 10 with a relatively small power, thereby saving electricity and prolonging a service life of the motor. In addition, when the can cover 10 is closed, an impact between the can cover 10 and the annular covering housing 11 can be reduced.

[0023] When a hand approaches the sensing trash can, the sensor 20 sends a signal. After detecting the sensing signal, the circuit board 19 drives the motor 15 to rotate. After the reducer 14 reduces a speed, the can cover 10 is driven to open.

[0024] The foregoing preferred embodiments further describe the purpose, technical solutions, and advantages of the present utility model in detail. It should be understood that the foregoing descriptions are merely preferred embodiments of the present utility model, and are not intended to limit the present utility model. Any modification, equivalent replacement, improvement, and the like made within the spirit and principle of the present utility model shall fall within the protection scope of the present utility model.

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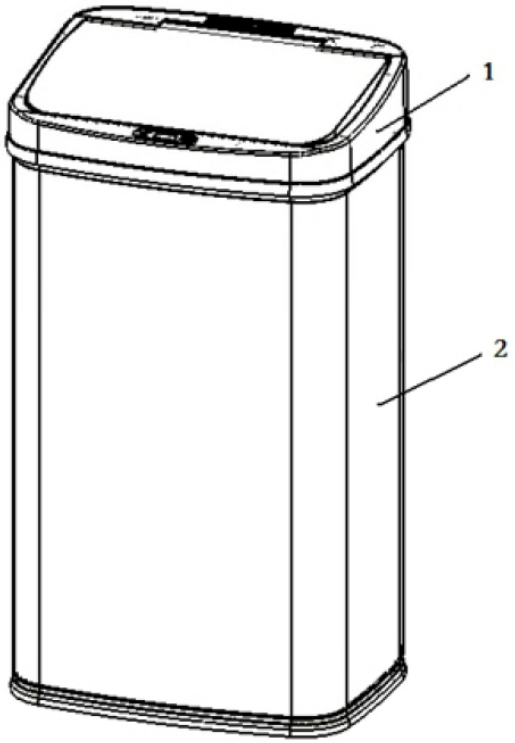

FIG. 1

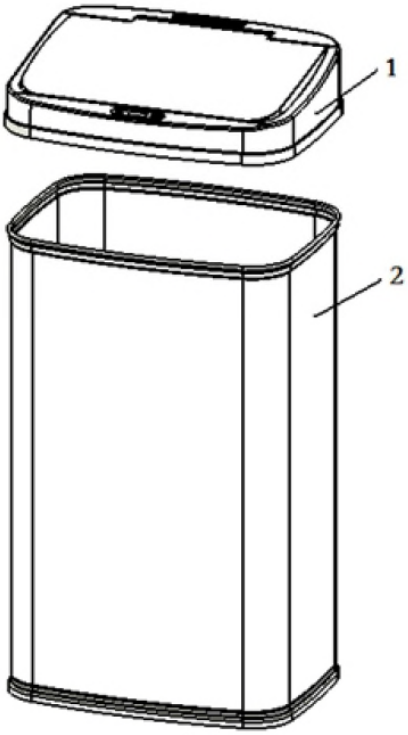

FIG. 2

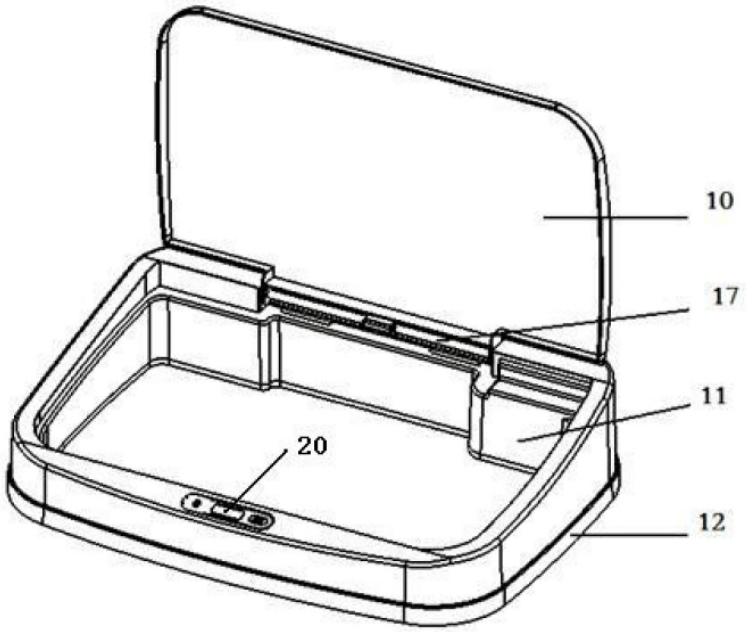

FIG. 3

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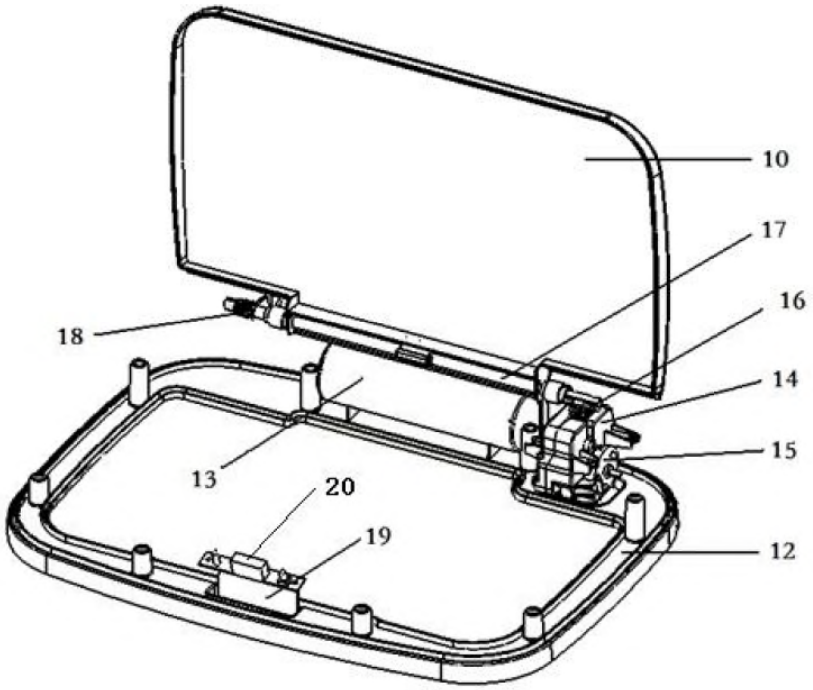

FIG. 4

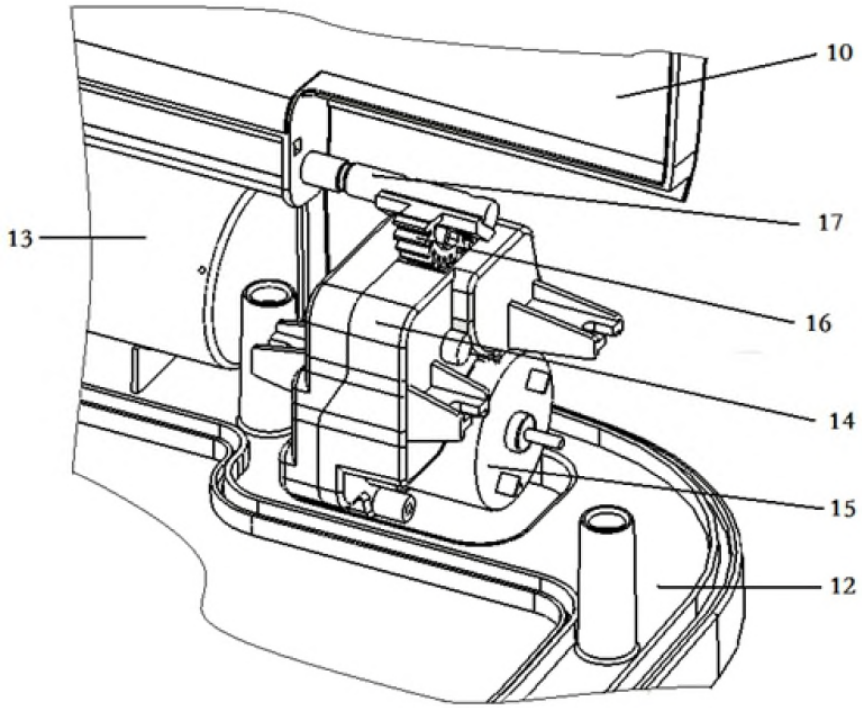

FIG. 5

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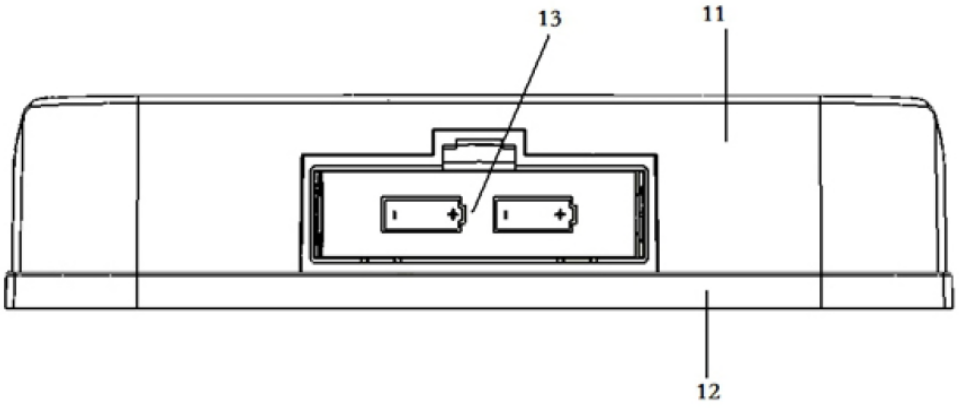

FIG. 6

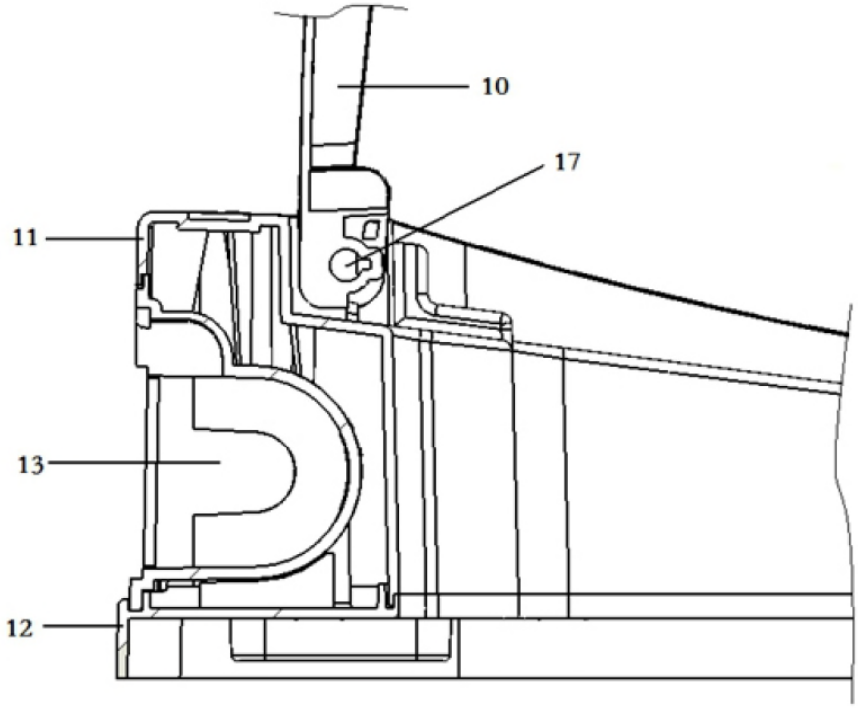

FIG. 7

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