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(54) **SWEEPING AND MOPPING INTEGRATED HOUSEHOLD INTELLIGENT ROBOT**

(57) The present disclosure discloses a sweeping and mopping integrated household intelligent robot, and relates to the technical field of sweepers. The sweeping and mopping integrated household intelligent robot includes a host machine and a base station. Dust bins are arranged in the host machine. A mopping mechanism is arranged at the bottom of the host machine. A cleaning system and a dust collection system are arranged in the base station. The cleaning system is used for cleaning the mopping mechanism; and the dust collection system is used for recycling garbage in the dust bins. The sweeping and mopping integrated household intelligent robot of the present disclosure has excellent obstacle crossing capability, achieves a better mopping effect by virtue of rolling mops with double cloth-bundled rollers, provides a strong dust collection force and has a variety of optional work modes; the rolling mops of the host machine are automatically cleaned by the base station; and a base station dust bag can be replaced quickly and conveniently.

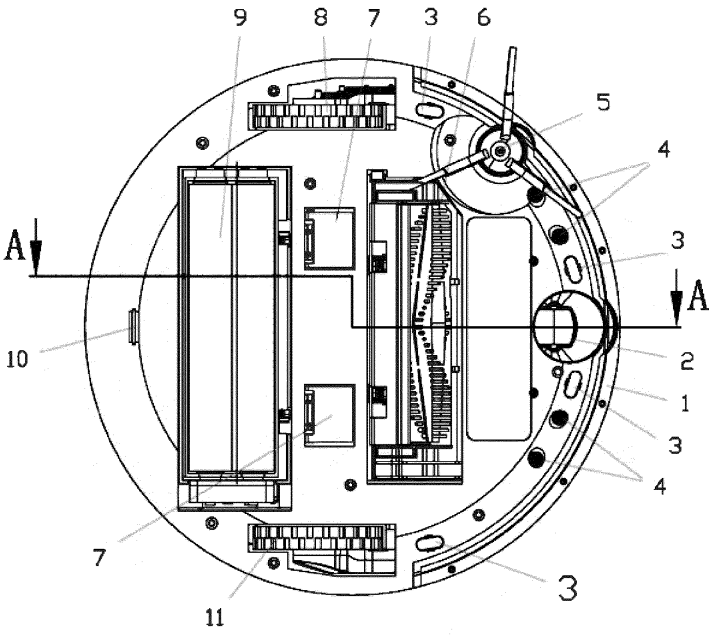

FIG. 1

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Description

TECHNICAL FIELD

[0001] The present disclosure relates to the technical field of sweepers, in particular to a sweeping and mopping integrated household intelligent robot.

BACKGROUND ART

[0002] With the development of technologies, more and more smart devices are applied to our life. Currently, a smart sweeper can autonomously draw and identify a sweeping route and also has a sweeping function and a mopping function. At present, the feedback of most sweeper users shows that the sweeper has poor capability of crossing obstacles, cannot provide satisfactory cleaning services, and fails to suck relatively large garbage. The slightly high obstacles and relatively large rubbish need to be processed manually. After the sweeper works for a long time, a mop will be covered with dust, and thus needs to be replaced or cleaned manually. The rubbish in a dust bin also needs to be poured out by taking out the dust bin of the sweeper, which wastes time and causes the rubbish to be stuck to hands easily.

SUMMARY

[0003] To solve the above technical problems, the present disclosure provides a sweeping and mopping integrated household intelligent robot to realize automatic cleaning of a mop and automatic discharge of rubbish from dust bins.

[0004] To implement the above objectives, the present disclosure provides the following solutions.

[0005] The present disclosure provides a sweeping and mopping integrated household intelligent robot, which includes a host machine and a base station;

dust bins are arranged in the host machine;

a mopping mechanism is arranged at a bottom of the host machine; and

a cleaning system and a dust collection system are arranged in the base station; wherein the cleaning system is configured for cleaning the mopping mechanism; and the dust collection system is configured for recycling rubbish in the dust bins.

[0006] In some embodiments, left and right sides of the bottom of the host machine are each provided with a driving wheel, and a small rolling wheel is arranged at a rear portion of the bottom of the host machine.

[0007] In some embodiments, a bottom of each dust bin is provided with a host-machine dust bin cover which is able to be opened and corresponds to a base-station dust collection opening of the dust collection system.

[0008] In some embodiments, the cleaning system includes a base-station clean water tank, a cleaning plate, a base-station sewage tank and a base-station water storage tank. The base-station water storage tank is located at an inner bottom of the base station. The cleaning plate is arranged in the base-station water storage tank and is provided with a plurality of water spraying holes. The plurality of water spraying holes are communicated with the base-station clean water tank; and the base station water storage tank is communicated with the base-station sewage tank.

[0009] In some embodiments, the cleaning plate is provided with a scraping plate which corresponds to a position of the mopping mechanism.

[0010] In some embodiments, the dust collection system includes a base-station dust bag, a base-station exhaust fan and a base-station dust collection pipe. The base-station exhaust fan is arranged outside the base-station dust bag. An air inlet of the base-station exhaust fan is communicated with an air channel at one side of the base-station dust bag. An end of the base-station dust collection pipe is communicated with the base-station dust bag; another end of the base-station dust collection pipe is provided with a base-station dust collection opening; and the base-station dust collection opening corresponds to a dust outlet of the dust bin.

[0011] In some embodiments, the base-station dust bag includes a dust bag body and a base-station dust bag handle. The dust bag body is of a box-shaped structure; the base-station dust bag handle is arranged at one side of the dust bag body; and the base-station dust bag handle is provided with an inlet communicating with the base-station dust collection pipe.

[0012] In some embodiments, the base-station dust bag includes a base-station-dust-bag-handle slider and a base-station-dust-bag-handle sliding sleeve. The base-station-dust-bag-handle slider is slidably arranged on the base-station-dust-bag-handle sliding sleeve.

[0013] In some embodiments, base-station-dust-bag flexible glue is arranged around the inlet.

[0014] In some embodiments, a base station cavity is arranged in the base station; the base-station exhaust fan is arranged at a bottom of the base station cavity; one side of the base station cavity is provided with a base-station-dust-collection-pipe dust outlet. The base-station-dust-collection-pipe dust outlet is located between the base-station dust collection pipe and the base-station dust bag handle.

[0015] Compared with the prior art, the present disclosure achieves the following technical effects.

1. The robot has excellent obstacle-crossing capability: the large-diameter driving wheels and the small wheel which is arranged on a rear bevel together endow the robot with the excellent obstacle-crossing capability. The host machine of the robot can cross uneven ground at junctions of a kitchen, a bathroom, a living room and a bedroom in a general house.
2. A better mopping effect is achieved: a rolling mop with the double cloth-bundled rollers provides an op-

positely-rolling function, and the water tank sprays water for humidification, that is to say, a mopping efficiency which is double of that of a single rolling mop is achieved, and thus a better mopping effect is provided.

3. A stronger dust collection force is provided: the horn-shaped streamlined exhaust pipe can obtain a stronger dust suction force under the action of an equivalent exhaust fan.

4. The robot has a variety of optional work modes: under the driving of the motor, the rolling sweeper capable of entirely rotating about the rotating shaft and the rolling mop capable of entirely rotating about the rotating shaft chain can be lifted up and down at any time. A user selects a work mode of the robot through a remote controller or APP operation: A, the host machine of the robot conducts rolling sweeping, dust collection and mopping simultaneously; B, the host machine of the robot conducts only rolling sweeping and dust collection without mopping; and C, the host machine of the robot conducts only mopping without rolling sweeping and dust collection.

5. The rolling mop of the host machine is automatically cleaned by the base station: after mopping a floor for a certain time, the host machine of the robot automatically returns to the base-station work room according to a set instruction. After a base station sensor senses the host machine, the cleaning plate automatically sprays water to cloth of the rolling mop of the host machine. Meanwhile, the rolling mop of the host machine rotates; the cloth of the rolling mop scrapes the cleaning plate; dirt is flushed into the water storage tank of the work room with water; and sewage is sucked into the base-station sewage tank under the action of a water pump.

6. Rubbish in the dust bins of the host machine is automatically sucked: after sweeping the floor for a certain time, the host machine automatically returns to the base-station work room according to a set instruction. After the base station sensor senses the host machine, the base-station exhaust fan works to exhaust air to vacuumize the base station cavity; the dust collection pipe is also vacuumized by exhausting the air through the dust bag; two dust covers of the dust bins of the host machine are opened through suction; and the rubbish in the dust bins of the host machine is sucked into the base-station dust bag. After dust collection is completed, the base-station exhaust fan stops working, the two dust covers of the dust bins of the host machine are automatically closed under the action of a spring force, and the user replaces the base-station dust bag.

7. The base-station dust bag can be replaced quickly and conveniently: the user inserts the dust bag handle into the base-station clamping slot so that the dust bag is clamped automatically, and the user can take out the dust bag by gently pulling the slider on the dust bag handle.

BRIEF DESCRIPTION OF THE DRAWINGS

[0016] To describe the technical solutions in the embodiments of the present disclosure or in the prior art more clearly, the accompanying drawings required for the embodiments will be briefly described below. Apparently, the accompanying drawings described below are merely some embodiments of the present disclosure, and a common person skilled in the art may also obtain other accompanying drawings based on these accompanying drawings without creative efforts.

FIG. 1 is a front view of a bottom of a host machine of a sweeping and mopping integrated household intelligent robot provided by the present disclosure;

FIG.2 is a section view of the host machine of the sweeping and mopping integrated household intelligent robot provided by the present disclosure;

FIG. 3 is a structural view of a rolling sweeper of the host machine of the sweeping and mopping integrated household intelligent robot provided by the present disclosure;

FIG. 4 is a bottom structural view of the rolling sweeper of the host machine of the sweeping and mopping integrated household intelligent robot provided by the present disclosure;

FIG. 5 is a lateral structural view of the rolling sweeper of the host machine of the sweeping and mopping integrated household intelligent robot provided by the present disclosure;

FIG. 6 is a structural view of a rolling-sweeper fixing base of the host machine of the sweeping and mopping integrated household intelligent robot provided by the present disclosure;

FIG. 7 is a bottom structural view of the rolling-sweeper fixing base of the host machine of the sweeping and mopping integrated household intelligent robot provided by the present disclosure;

FIG. 8 is a lateral structural view of the rolling-sweeper fixing base of the host machine of the sweeping and mopping integrated household intelligent robot provided by the present disclosure;

FIG. 9 is a structural view of a rolling-sweeper roller of the host machine of the sweeping and mopping integrated household intelligent robot provided by the present disclosure;

FIG. 10 is a structural view of a rolling-sweeper holder of the host machine of the sweeping and mopping integrated household intelligent robot provided by the present disclosure;

FIG. 11 is an assembly structural view of the rolling-sweeper roller and the rolling-sweeper holder of the host machine of the sweeping and mopping integrated household intelligent robot provided by the present disclosure;

FIG. 12 is a bottom assembly structural view of the rolling-sweeper roller and the rolling-sweeper holder of the host machine of the sweeping and mopping

integrated household intelligent robot provided by the present disclosure;

FIG. 13 is an assembly sectional structural view along line B-B in Fig. 12, of the rolling-sweeper roller and the rolling-sweeper holder of the host machine of the sweeping and mopping integrated household intelligent robot provided by the present disclosure;

FIG. 14 is a structural view of a rolling mop of the host machine of the sweeping and mopping integrated household intelligent robot provided by the present disclosure;

FIG. 15 is a bottom structural view of the rolling mop of the host machine of the sweeping and mopping integrated household intelligent robot provided by the present disclosure;

FIG. 16 is a sectional structural view along line C-C in Fig.15, of the rolling mop of the host machine of the sweeping and mopping integrated household intelligent robot provided by the present disclosure;

FIG. 17 is a structural view of a rolling-mop fixing base of the host machine of the sweeping and mopping integrated household intelligent robot provided by the present disclosure;

FIG. 18 is a structural view of a rolling-mop roller of the host machine of the sweeping and mopping integrated household intelligent robot provided by the present disclosure;

FIG. 19 is a structural view of a rolling-mop holder of the host machine of the sweeping and mopping integrated household intelligent robot provided by the present disclosure;

FIG. 20 is an assembly structural view of the rolling-mop roller and the rolling-mop holder of the host machine of the sweeping and mopping integrated household intelligent robot provided by the present disclosure;

FIG. 21 is a bottom assembly structural view of the rolling-mop roller and the rolling-mop holder of the host machine of the sweeping and mopping integrated household intelligent robot provided by the present disclosure;

FIG. 22 is a structural view of an exhaust pipeline of the host machine of the sweeping and mopping integrated household intelligent robot provided by the present disclosure;

FIG. 23 is another structural view of the exhaust pipeline of the host machine of the sweeping and mopping integrated household intelligent robot provided by the present disclosure;

FIG. 24 is a structural view of a collision-proof strip of the host machine of the sweeping and mopping integrated household intelligent robot provided by the present disclosure;

FIG. 25 is a structural view of a left driving wheel of the host machine of the sweeping and mopping integrated household intelligent robot provided by the present disclosure;

FIG. 26 is a structural view of a right driving wheel of the host machine of the sweeping and mopping integrated household intelligent robot provided by the present disclosure;

FIG. 27 is a structural view of a side sweeper of the host machine of the sweeping and mopping integrated household intelligent robot provided by the present disclosure;

FIG. 28 is a structural view of a base station of the sweeping and mopping integrated household intelligent robot provided by the present disclosure;

FIG. 29 is a structural view of a base-station cleaning plate of the sweeping and mopping integrated household intelligent robot provided by the present disclosure;

FIG. 30 is a structural view of a base-station dust collection pipe of the sweeping and mopping integrated household intelligent robot provided by the present disclosure;

FIG. 31 is a top view of the base station of the sweeping and mopping integrated household intelligent robot provided by the present disclosure;

FIG. 32 is a section view of the base station and the host machine along line B-B in Fig.31, of the sweeping and mopping integrated household intelligent robot provided by the present disclosure;

FIG. 33 is a structural view of a dust bin of the host machine of the sweeping and mopping integrated household intelligent robot provided by the present disclosure;

FIG. 34 is a structural view of a base-station dust bag of the sweeping and mopping integrated household intelligent robot provided by the present disclosure;

FIG. 35 is a structural view of a base-station-dust-bag handle of the sweeping and mopping integrated household intelligent robot provided by the present disclosure;

FIG. 36 is a structural view of a base-station-dust-bag slider of the sweeping and mopping integrated household intelligent robot provided by the present disclosure; and

FIG. 37 is a structural view of the base station of the sweeping and mopping integrated household intelligent robot provided by the present disclosure after the cleaning plate and the dust bag are dismounted.

[0017] List of reference numbers: 1 host machine shell; 2 universal wheel; 3 ground detection sensor; 4 ultrasonic sensor; 5 side sweeper; 6 rolling sweeper; 7 dust bin; 8 right driving wheel; 9 rolling mop; 10 small rolling wheel; 11 left driving wheel; 12 collision-proof strip; 13 radar; 14 rolling sweeper motor; 15 dust collection opening; 16 filter screen; 17 rolling mop motor; 18 water tank; 19 exhaust fan; 20 battery; 21 rolling-sweeper roller; 22 rolling-sweeper fixing base; 23 rolling-sweeper lifting motor; 24 rolling-sweeper driving lever; 25 rolling-sweeper rotating shaft; 26 rolling-sweeper holder; 27 rolling-mop rotating shaft; 28 rolling-mop driving lever; 29 rolling-mop lifting

motor; 30 rolling-mop fixing frame; 31 rolling-mop roller; 32 rolling-mop holder; 33 exhaust opening; 34 exhaust pipeline; 35 water spraying hole; 36 cleaning plate; 37 base station shell; 38 base-station power plug; 39 base-station sewage tank; 40 base-station top cover; 41 base-station clean water tank; 42, base-station dust bag; 43 base-station work room; 44 base-station dust collection opening; 45 base-station-dust-collection-pipe elastic piece; 46 base-station-dust-collection-pipe inclined block; 47 base-station-dust-collection-pipe dust outlet; 48 base-station dust collection pipe; 49 base station cavity; 50 base-station exhaust fan; 51 host-machine dust bin cover; 52 host-machine-dust-bin-cover rotating shaft; 53 host-machine-dust-bin-cover spring; 54 base-station-dust-bag-handle slider; 55 base-station-dust-bag-handle sliding sleeve; 56 base-station-dust-bag flexible glue; 57 base-station-dust-bag handle; 58 base-station-dust-bag-handle sloping shoulder; 59 base-station-cavity clamping slot; and 60 base-station water storage tank.

DETAILED DESCRIPTION OF THE EMBODIMENTS

[0018] The technical solutions of the embodiments of the present disclosure will be clearly and completely described below with reference to the accompanying drawings of the embodiments. Apparently, the described embodiments are merely a part rather than all of the embodiments of the present disclosure. All other embodiments obtained by a common person skilled in the art based on the embodiments of the present disclosure without creative efforts should fall within the protection scope of the present disclosure.

[0019] The "front", "rear", "left" and "right" referred to in this specification are based on a direction of the intelligent robot in normal operation.

[0020] As shown in FIG. 1 to FIG. 37, the present embodiment provides a sweeping and mopping integrated household intelligent robot, which includes a host machine and a base station. Dust bins 7 are arranged in the host machine. A bottom of the host machine is provided with a mopping mechanism; a cleaning system and a dust collection system are arranged in the base station. The cleaning system is used for cleaning the mopping mechanism; and the dust collection system is used for recycling rubbish in the dust bins 7.

[0021] The dust bins 7 are located at a middle portion of a host machine body, and the mopping mechanism adopts double rolling mops 9 located at a rear portion of the host machine body.

[0022] The host machine includes a machine body shell, a universal wheel 2, a battery 20, a rolling sweeper 6, an exhaust pipeline 34, a water tank 18, a left driving wheel 11, a right driving wheel 8, four ground detection sensors 3, a side sweeper 5, two groups of ultrasonic sensors, a radar 13, a protective hood for the radar 13, and a collision-proof strip 12.The universal wheel 2 is fixed to a front portion of the bottom of the machine body; the battery 20 and the rolling sweeper 6 are arranged behind the universal wheel 2. The exhaust pipeline 34 is arranged at the rear portion of the machine body; the water tank 18 is arranged above the exhaust pipeline 34; the left driving wheel 11 is arranged at a left portion of the machine body; the right driving wheel 18 is arranged at a right portion thereof. The four ground detection sensors 3 are arranged at a lateral front portion of the machine body; the two groups of ultrasonic sensors are arranged at the lateral front portion; the radar 13 and the protective hood for the radar 13 are fixed to a top portion of the machine body; and the collision-proof strip 12 is mounted at a forefront of the machine body. The intelligent robot is powered by the left driving wheel 11 and the right driving wheel 8 and navigated by the radar 13. The ground detection sensors 3 and the ultrasonic sensors are configured to detect changes of ground conditions.

[0023] A rolling-sweeper lifting motor 23 drives a rolling-sweeper driving lever 24; the rolling-sweeper driving lever 24 drives the rolling sweeper 6 to rotate about a rolling-sweeper rotating shaft 25, so that a rolling-sweeper roller 21 is rotationally lifted away from the ground without being contact with the ground. When the rolling-sweeper driving lever 24 does not work, the intelligent robot moves forward, and the rolling sweeper 6 meets an obstacle, can be rotationally lifted up around the rolling-sweeper rotating shaft 25 and crosses the obstacle; and meanwhile, the rolling-sweeper roller 21 is driven to rotate all the time by a rolling sweeper motor 14, and sweeping action continues without stop.

[0024] Each rolling mop 9 includes double cloth-bundled rollers and is driven by a rolling mop motor 17, and the double rolling mop rollers 31 are driven to respectively roll towards the middle by a gear. Two water spraying hoses are arranged above each rolling mop roller 31, and the hoses are connected with a water pump, a one-way valve and a water tank 18 which is arranged above the rolling mop 9 mechanism. Under the action of the water pump, water in the water tank 18 is sprayed on the cloth-bundled rollers, so that the cloth-bundled rollers are wetted.

[0025] An exhaust fan 19 works to suck air or exhaust air through an exhaust pipeline 34 arranged at the rear portion of the host machine. One end of the exhaust pipeline 34 is hermetically fixed to a dust bin 7 equipped with a filter screen 16 to form an air suction opening, and an air discharging pipe is fixed to a rear shell of the intelligent robot to form an air outlet. An air suction pipeline is designed as a streamlined horn mouth; a small opening of the air suction pipeline is fixed to an exhaust opening 33 of the exhaust fan 19; and the exhaust fan 19 is placed at the rear portion of the host machine of the intelligent robot as far as possible to obtain a maximum volume of the air suction pipeline.

[0026] The right driving wheel 8 and the left driving wheel 11 each adopt a large-diameter skid-proof wheel with a diameter equal to or larger than 85 mm; a front small rolling wheel 10 is fixed to a rear bevel of the bottom

of the host machine; and when the host machine of the intelligent robot climbs up, moves down or crosses an obstacle, the small wheel preferably makes contact with the ground to prevent the machine body from making contact with the ground and being stuck.

[0027] Abase station includes a base station shell, a base-station top cover 40, a cleaning plate 36, a power socket, a base-station sewage tank 39, a base-station clean water tank 41, a base-station dust bag 42, a dust collection pipe, a base-station exhaust fan 50 and a water storage tank. A base -station work room 43 is arranged at a bottom of the base station shell; a front end of the base-station work room 43 is provided with an opening. The host machine enters or exits the base-station work room 43 via the opening. The water storage tank is arranged at the bottom of the base-station work room 43. The cleaning plate 36 is arranged in the water storage tank. Atop of the base station shell is open. One side of the base-station top cover 40 is openably connected with one side of the base station shell; the base-station dust bag 42 is arranged at a middle portion in the base station shell. The base-station sewage tank 39 and the base-station clean water tank are respectively arranged at two sides of the base-station dust bag 42.

[0028] A plurality of water spraying holes 35 are distributed in the cleaning plate 36. The base-station clean water tank 41 is connected with the water pump and the water spraying holes 35 through hoses. Clean water in the base-station clean water tank 41 is sprayed out of the water spraying holes 35 in the cleaning plate 36 via the hoses under the action of the water pump.

[0029] The water storage tank is arranged below the cleaning plate 36 in the base-station work room 43 and connected with the water pump and the base-station sewage tank 39 through hoses. Under the action of the water pump, sewage in the base-station water storage tank 60 flows into the base-station sewage tank 39 via the hoses.

[0030] A base-station dust collection pipe 48 is provided with two base-station dust collection openings 44 formed inside the base-station work room 43. The host machine returns to the base-station work room 43 and is positioned. Two host-machine dust bin covers 51 on the dust bins 7 of the host machine are just above the base-station dust collection openings 44. A base-station dust bag 42 includes a base-station-dust-bag handle 57 and a bag which realizes ventilation and isolates dust. The base-station-dust-bag handle 57 includes a base-station-dust-bag-handle slider 54, a base-station-dust-bag-handle sliding sleeve 55 and base-station-dust-bag flexible glue 56. The base-station-dust-bag-handle sliding sleeve 55 is provided with a gap in the middle, sealed at the periphery and the bottom, and opened at the top thereof. The bag and the base-station-dust-bag flexible glue 56 are sewed on the wall of the base-station-dust-bag-handle sliding sleeve 55. The base-station-dust-bag-handle slider 54 is installed in the gap in the middle of the base-station-dust-bag-handle sliding sleeve 55 and can move up and down along the base-station-dust-bag-handle sliding sleeve 55. The base-station dust bag 42 is installed at a base-station-dust-collection-pipe dust outlet 47 of the base-station dust collection pipe 48 and clamped in a base-station-cavity clamping slot 59, and the base-station-dust-bag flexible glue 56 on the base-station-dust-bag handle 57 closely sleeves the base-station dust collection pipe 48. A base-station exhaust fan 50 is fixed to the bottom surface of the base station cavity 49. The periphery and bottom surface of the base station cavity 49 are sealed, and a base-station top cover 40 covers the base station cavity 49 in a manner of exposing the base-station-dust-collection-pipe dust outlet 47 of the base-station dust collection pipe 48.

[0031] After the base-station dust bag 42 is put into the base station cavity 49, the base-station-dust-bag handle 57 on the base-station dust bag 42 is clamped into the base-station-cavity clamping slot 59 of the base station cavity 49. When the base-station dust bag 42 is put into the base station cavity 49, the base-station-dust-bag handle 57 slides downwards along the base-station-cavity clamping slot 59 of the base station cavity 49, and meets two base-station-dust-collection-pipe inclined blocks 46 of the base-station dust collection pipe 48; the two base-station-dust-collection-pipe inclined blocks 46 of the base-station dust collection pipe 48 move backwards after stressed; when the base-station dust bag 42 is put in place, two holes of the base-station-dust-bag handle 57 are just aligned with the two base-station-dust-collection-pipe inclined blocks 46 of the base-station dust collection pipe 48. Under an elastic force of two base-station-dust-collection-pipe elastic pieces 45 fixed to the base-station dust collection pipe 48, the two base-station-dust-collection-pipe inclined blocks 46 extend into the two holes of the base-station-dust-bag handle 57 and clamp the base-station dust bag 42 to prevent the base-station dust bag 42 from falling off. When the base-station dust bag 42 needs to be replaced, the base-station-dust-bag-handle slider 54 of the base-station dust bag handle 57 is slightly pulled and moves upwards along the base-station-dust-bag-handle sliding sleeve 55. Two base-station-dust-bag-handle sloping shoulders 58 of the base-station-dust-bag-handle slider 54 meet the two base-station-dust-collection-pipe inclined blocks 46 of the base-station dust collection pipe 48, and the two base-station-dust-collection-pipe inclined blocks 46 are stressed, so the two base-station-dust-collection-pipe inclined blocks 46 and the base-station-dust-collection-pipe dust outlet 47 simultaneously move back to leave away from the holes of the base-station-dust-bag handle 57; and the base-station dust bag 42 is taken out.

[0032] A base station switch of the intelligent robot is turned on to trigger a host machine switch. After started, the host machine automatically exits the base-station work room 43 and draws a map of the room.

[0033] In the present embodiment, the intelligent robot sweeps or mops a floor in a work mode selected through a remote controller or APP operation, and the rolling

sweeper 6 of the host machine of the intelligent robot collects dust and sweeps the floor simultaneously. Under the action of the battery 20, the rolling sweeper motor 14, the rolling mop motor 17, the right driving wheel 8, the left driving wheel 11, the side sweeper 5, the exhaust fan 19 and the water pump work simultaneously. The host machine moves forward; the side sweeper 5 sweeps dust and rubbish at the side of the host machine shell 1 to the middle; and the rolling-sweeper roller 21 of the rolling sweeper 6 rotates to roll the dust and the rubbish on the ground to the inner side of the rolling sweeper 6. Under the action of the exhaust pipeline 34 and the exhaust fan 19, the air near the rolling sweeper 6 quickly enters the dust bins 7 through the openings of the dust bins 7 to form a suction force; and after filtered by the filter screens 16 of the dust bins 7, the air flow is discharged out of the host machine body through the exhaust pipeline 34. Under the action of the water pump, the water in the water tank 18 is sprayed on the roller cloth on the rolling mops 9 via a water pipe so that the roller cloth is wetted; the two rolling-mop rollers 31 on the rolling mops 9 respectively roll toward the middle to wipe the ground in a rolling manner, and thus the dust on the ground is wiped. The radar 13 guides the host machine of the intelligent robot to move forwards, and the universal wheel 2 controls the direction of the intelligent robot. The ground detection sensors 3 detect the ground conditions and feeds back to a host machine chip of the intelligent robot to determine a route in which the host machine of the intelligent robot moves forwards.

[0034] In the present embodiment, the intelligent robot sweeps a floor in a work mode selected through a remote controller or APP operation. The rolling sweeper 6 of the host machine of the intelligent robot only collects dust without mopping the floor. Under the action of the battery 20, a rolling-mop lifting motor 29 drives a rolling-mop driving lever 28 to rotate to drive a rolling-mop holder 32 equipped with the rolling-mop roller 31 to be rotationally lifted up around a rolling-mop rotating shaft 27. The rolling-mop roller 31 leaves away from the ground and stops working. The rolling sweeper motor 14, the left driving wheel 11, the right driving wheel 8, the side sweeper 5 and the exhaust fan 19 work simultaneously. The intelligent robot moves forwards; the side sweeper 5 sweeps the dust on the side of the host machine shell 1 to the middle. The rolling-sweeper roller 21 of the rolling sweeper 6 rotates to roll the dust and rubbish on the ground to the inner side of the rolling sweeper 6. Under the action of the exhaust pipeline 34 and the exhaust fan 19, the air near the rolling sweeper 6 quickly enters the dust bins 7 via the openings of the dust bins 7 to form a suction force. The dust and the rubbish enter the dust bins 7 via the dust collection opening 15, thus a function of sweeping the ground is achieved. After filtered by the filter screens 16 of the dust bins 7, the air flow is discharged out of the machine body via the exhaust pipeline 34.

[0035] In the present embodiment, the intelligent robot mops a floor in a work mode selected through a remote controller or APP operation. The rolling sweeper 6 of the host machine of the intelligent robot only mops the floor without collecting dust. Under the action of the battery 20, a rolling-sweeper lifting motor 23 drives a rolling-sweeper driving lever 24 to rotate to drive the rolling-sweeper holder 25 equipped with the rolling-sweeper roller 21 to be rotationally lifted up around the rolling-sweeper rotating shaft 25, the rolling sweeper roller 21 leaves away from the ground and stops working. The rolling mop motor 17, the left driving wheel 11 and the right driving wheel 8 work simultaneously. Under the action of the water pump, the water in the water tank 18 is sprayed on the roller cloth of the rolling mops 9 via a water pipe, so that the roller cloth is wetted; the two rolling-mop rollers 31 on the rolling mops 9 respectively roll toward the middle to wipe the ground in a rolling manner; and thus the dust on the ground is wiped.

[0036] In the present embodiment, the user can set a frequency for the host machine of the intelligent robot to automatically return to the base station to clean the rolling-mop rollers 31 or sucking the rubbish in the dust bins 7 of the host machine. After the base station finishes the work of cleaning the rolling-mop rollers 31 of the host machine or collecting dust, the host machine automatically exits the base-station work room 43 and continues to execute instructions set by the user until the instructions are executed completely, and then the host machine of the intelligent robot automatically returns to the base station to be charged.

[0037] Technical solution 1. A sweeping and mopping integrated household intelligent robot, comprising a host machine and a base station, wherein

dust bins are arranged in the host machine;
a mopping mechanism is arranged at a bottom of the host machine; and
a cleaning system and a dust collection system are arranged in the base station; wherein the cleaning system is configured for cleaning the mopping mechanism; and the dust collection system is configured for recycling rubbish in the dust bins.

[0038] Technical solution 2. The sweeping and mopping integrated household intelligent robot according to technical solution 1, wherein left and right sides of the bottom of the host machine are each provided with a driving wheel, and a small rolling wheel is arranged at a rear portion of the bottom of the host machine.

[0039] Technical solution 3. The sweeping and mopping integrated household intelligent robot according to technical solution 1 or 2, wherein a bottom of each dust bin is provided with a host-machine dust bin cover which is able to be opened and corresponds to a base-station dust collection opening of the dust collection system.

[0040] Technical solution 4. The sweeping and mopping integrated household intelligent robot according to any one of technical solutions 1-3, wherein the cleaning system comprises a base-station clean water tank, a

cleaning plate, a base-station sewage tank and a base-station water storage tank, wherein the base-station water storage tank is located at an inner bottom of the base station; the cleaning plate is arranged in the base-station water storage tank and is provided with a plurality of water spraying holes; the plurality of water spraying holes are communicated with the base-station clean water tank; and the base station water storage tank is communicated with the base-station sewage tank.

[0041] Technical solution 5. The sweeping and mopping integrated household intelligent robot according to any one of technical solutions 1-4, wherein the cleaning plate is provided with a scraping plate which corresponds to a position of the mopping mechanism.

[0042] Technical solution 6. The sweeping and mopping integrated household intelligent robot according to any one of technical solutions 1-5, wherein the dust collection system comprises a base-station dust bag, a base-station exhaust fan and a base-station dust collection pipe; the base-station exhaust fan is arranged outside the base-station dust bag; an air inlet of the base-station exhaust fan is communicated with an air channel at one side of the base-station dust bag; an end of the base-station dust collection pipe is communicated with the base-station dust bag; another end of the base-station dust collection pipe is provided with a base-station dust collection opening; and the base-station dust collection opening corresponds to a dust outlet of the dust bin.

[0043] Technical solution 7. The sweeping and mopping integrated household intelligent robot according to any one of technical solutions 1- 6, wherein the base-station dust bag comprises a dust bag body and a base-station-dust-bag handle, wherein the dust bag body is of a box-shaped structure; the base-station-dust-bag handle is arranged at one side of the dust bag body; and the base-station-dust-bag handle is provided with an inlet communicating with the base-station dust collection pipe.

[0044] Technical solution 8. The sweeping and mopping integrated household intelligent robot according to any one of technical solutions 1-7, wherein the base-station-dust-bag handle comprises a base-station-dust-bag-handle slider and a base-station-dust-bag-handle sliding sleeve, wherein the base-station-dust-bag-handle slider is slidably arranged on the base-station-dust-bag-handle sliding sleeve.

[0045] Technical solution 9. The sweeping and mopping integrated household intelligent robot according to any one of technical solutions 1-8, wherein base-station-dust-bag flexible glue is arranged around the inlet.

[0046] Technical solution 10. The sweeping and mopping integrated household intelligent robot according to any one of technical solutions 1-9, wherein a base station cavity is arranged in the base station; the base-station exhaust fan is arranged at a bottom of the base station cavity; one side of the base station cavity is provided with a base-station-dust-collection-pipe dust outlet; and the base-station-dust-collection-pipe dust outlet is located between the base-station dust collection pipe and the base-station-dust-bag handle.

[0047] It should be noted that it is obvious to those skilled in the art that the present disclosure is not limited to the details of the above exemplary embodiments, and that the present disclosure can be implemented in other specific forms without departing from the spirit or basic features of the present disclosure. Therefore, the embodiments should be regarded as exemplary and non-limiting in every respect, and the scope of the present disclosure is defined by the appended claims rather than the above description, and all changes falling within the meaning and scope of equivalent elements of the claims should be included in the present disclosure, and any reference numbers in the claims should not be construed as a limitation to the claims involved.

[0048] Specific embodiments are used in this specification for illustration of the principles and implementations of the present disclosure. The description of the above embodiments is merely used to help understand the method and its core principles of the present disclosure. In addition, a common person skilled in the art can make modifications to the specific implementations and application scope in accordance with the concept of the present disclosure. In conclusion, the content of this specification should not be construed as a limitation to the present disclosure.

Claims

1. A sweeping and mopping integrated household intelligent robot, comprising a host machine and a base station, wherein

   dust bins are arranged in the host machine;
   a mopping mechanism is arranged at a bottom of the host machine; and
   a cleaning system and a dust collection system are arranged in the base station; wherein the cleaning system is configured for cleaning the mopping mechanism; and the dust collection system is configured for recycling rubbish in the dust bins.

2. The sweeping and mopping integrated household intelligent robot according to claim 1, wherein left and right sides of the bottom of the host machine are each provided with a driving wheel, and a small rolling wheel is arranged at a rear portion of the bottom of the host machine.

3. The sweeping and mopping integrated household intelligent robot according to claim 1, wherein a bottom of each dust bin is provided with a host-machine dust bin cover which is able to be opened and corresponds to a base-station dust collection opening of the dust collection system.

4. The sweeping and mopping integrated household intelligent robot according to claim 1, wherein the cleaning system comprises a base-station clean water tank, a cleaning plate, a base-station sewage tank and a base-station water storage tank, wherein the base-station water storage tank is located at an inner bottom of the base station; the cleaning plate is arranged in the base-station water storage tank and is provided with a plurality of water spraying holes; the plurality of water spraying holes are communicated with the base-station clean water tank; and the base station water storage tank is communicated with the base-station sewage tank.

5. The sweeping and mopping integrated household intelligent robot according to claim 4, wherein the cleaning plate is provided with a scraping plate which corresponds to a position of the mopping mechanism.

6. The sweeping and mopping integrated household intelligent robot according to claim 1, wherein the dust collection system comprises a base-station dust bag, a base-station exhaust fan and a base-station dust collection pipe; the base-station exhaust fan is arranged outside the base-station dust bag; an air inlet of the base-station exhaust fan is communicated with an air channel at one side of the base-station dust bag; an end of the base-station dust collection pipe is communicated with the base-station dust bag; another end of the base-station dust collection pipe is provided with a base-station dust collection opening; and the base-station dust collection opening corresponds to a dust outlet of the dust bin.

7. The sweeping and mopping integrated household intelligent robot according to claim 6, wherein the base-station dust bag comprises a dust bag body and a base-station-dust-bag handle, wherein the dust bag body is of a box-shaped structure; the base-station-dust-bag handle is arranged at one side of the dust bag body; and the base-station-dust-bag handle is provided with an inlet communicating with the base-station dust collection pipe.

8. The sweeping and mopping integrated household intelligent robot according to claim 7, wherein the base-station-dust-bag handle comprises a base-station-dust-bag-handle slider and a base-station-dust-bag-handle sliding sleeve, wherein the base-station-dust-bag-handle slider is slidably arranged on the base-station-dust-bag-handle sliding sleeve.

9. The sweeping and mopping integrated household intelligent robot according to claim 7, wherein base-station-dust-bag flexible glue is arranged around the inlet.

10. The sweeping and mopping integrated household intelligent robot according to claim 7, wherein a base station cavity is arranged in the base station; the base-station exhaust fan is arranged at a bottom of the base station cavity; one side of the base station cavity is provided with a base-station-dust-collection-pipe dust outlet; and the base-station-dust-collection-pipe dust outlet is located between the base-station dust collection pipe and the base-station-dust-bag handle.

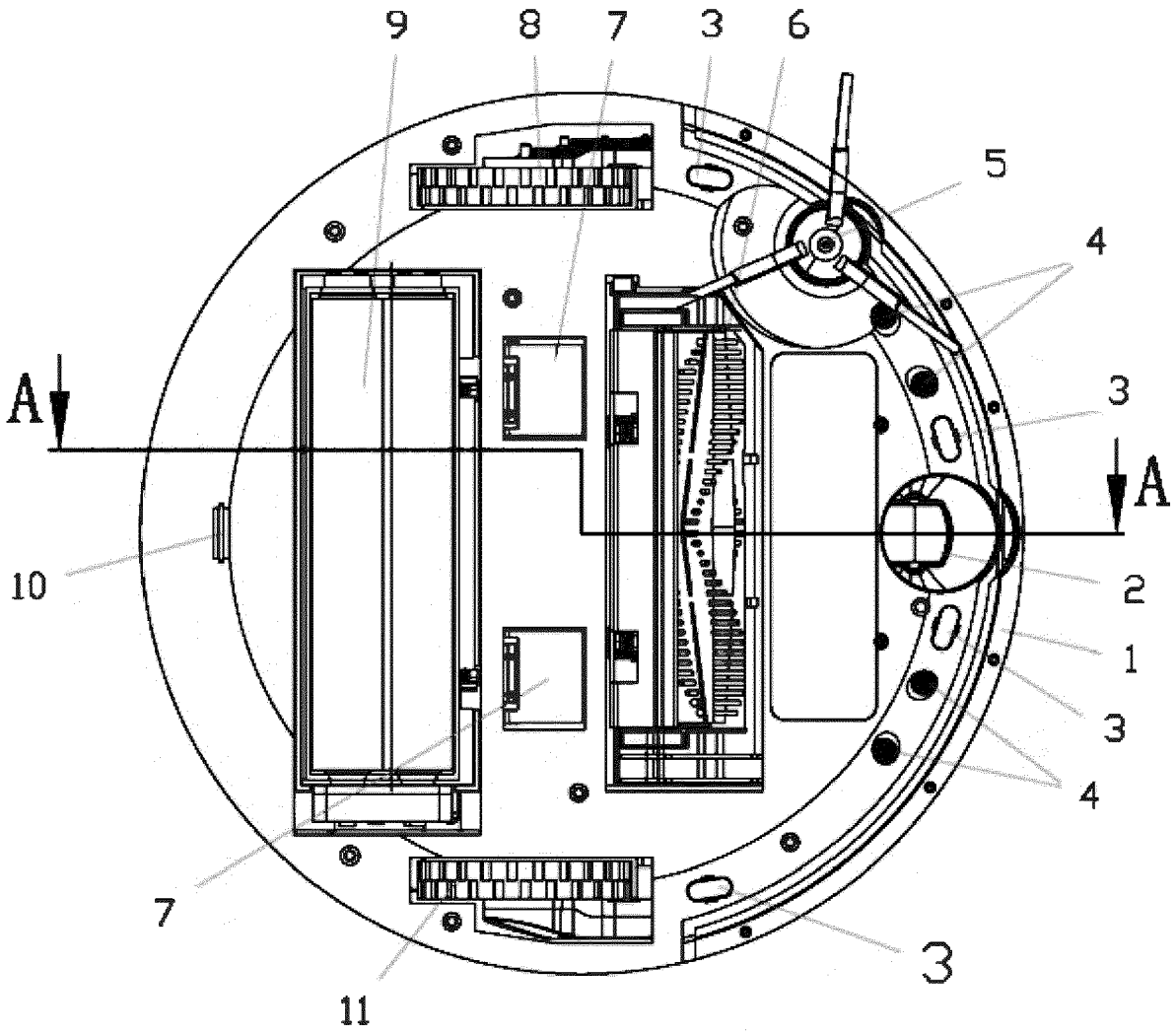

FIG. 1

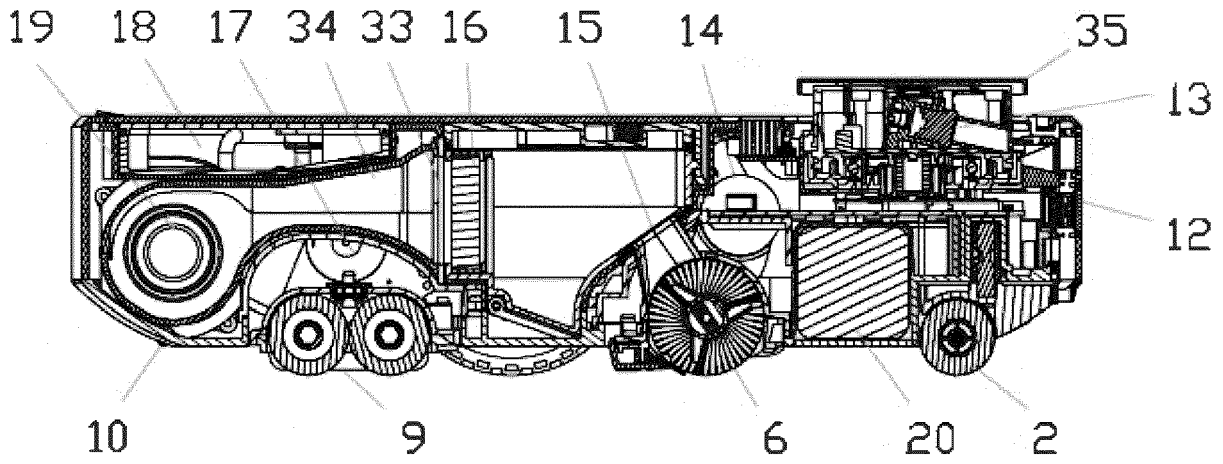

FIG. 2

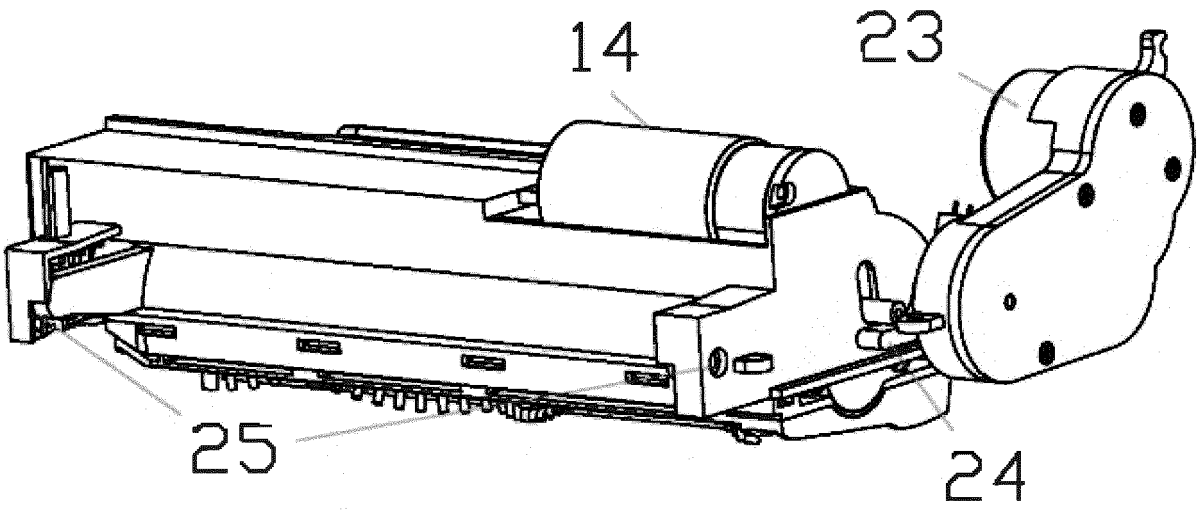

FIG. 3

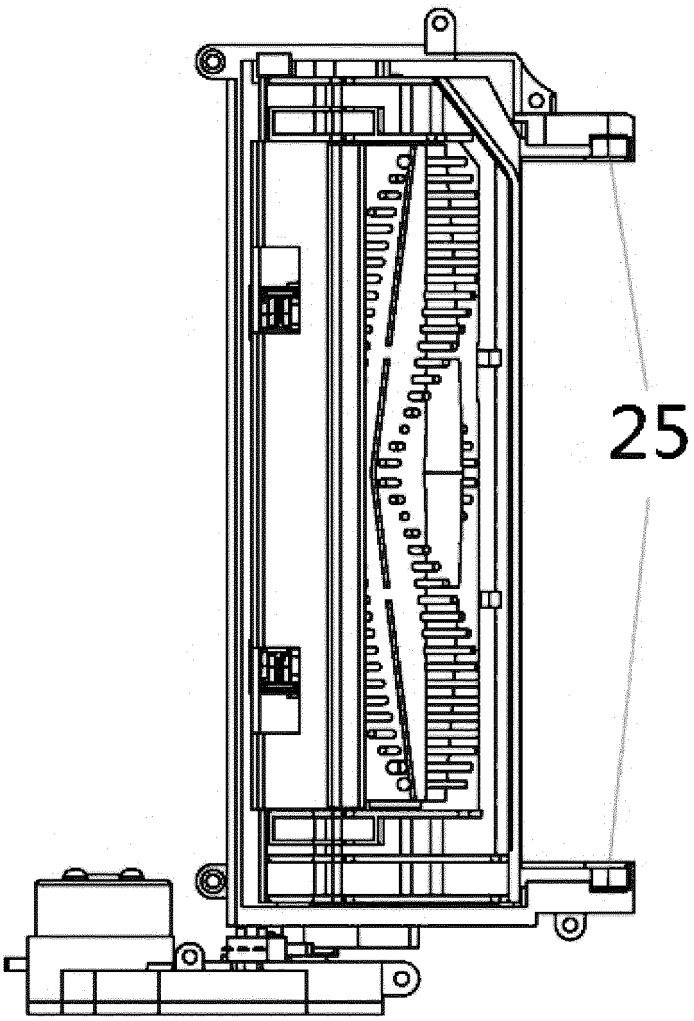

FIG. 4

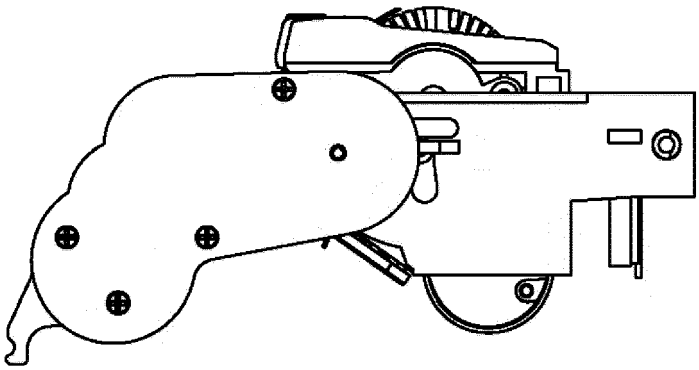

FIG. 5

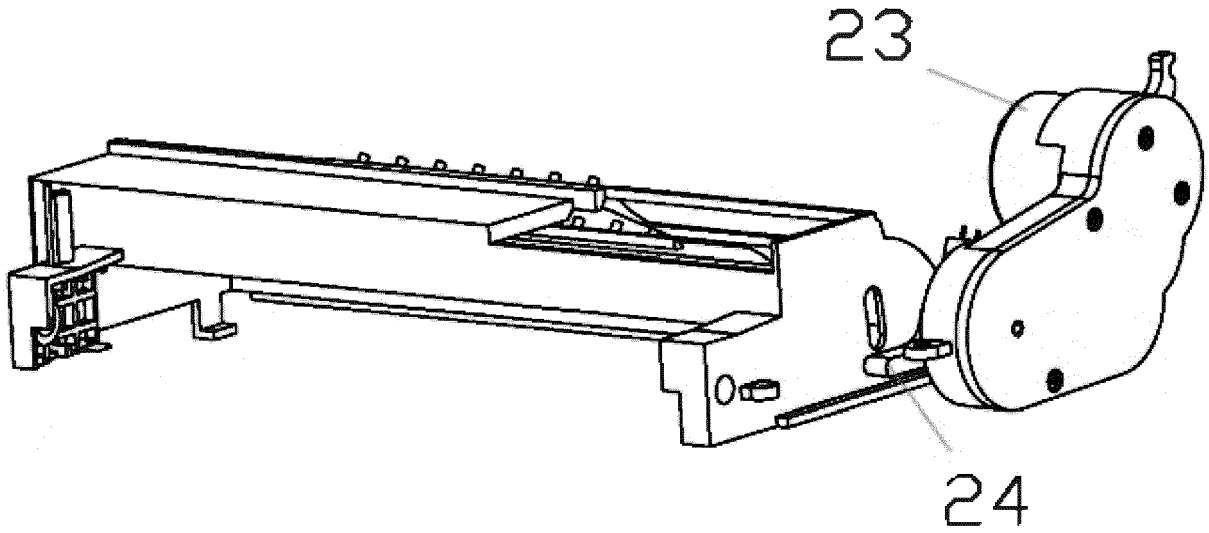

FIG. 6

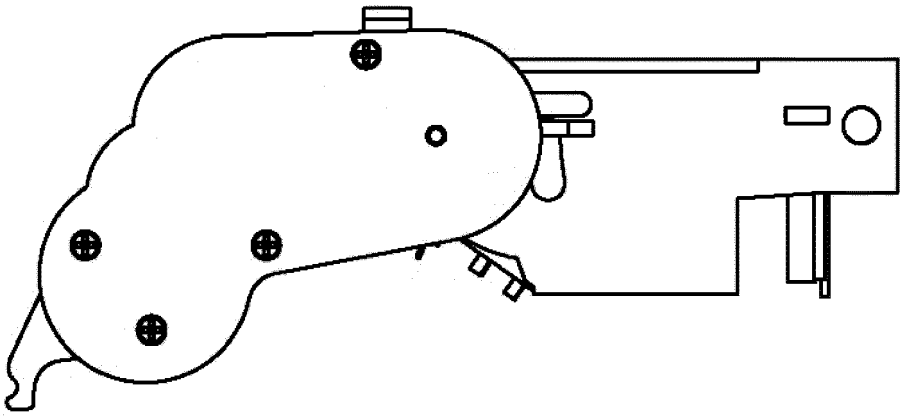

FIG. 7

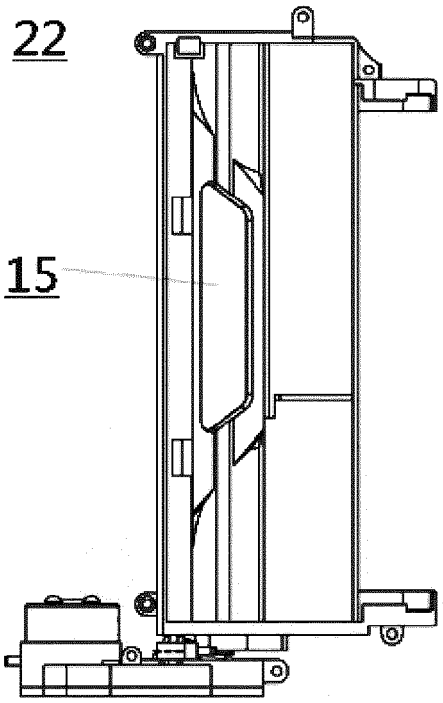

FIG. 8

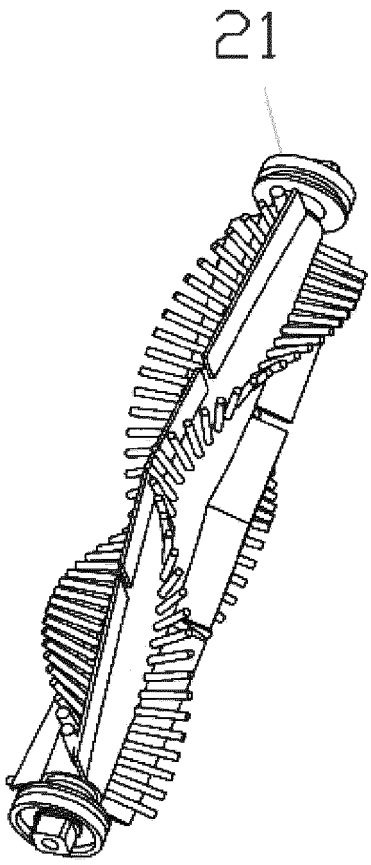

FIG. 9

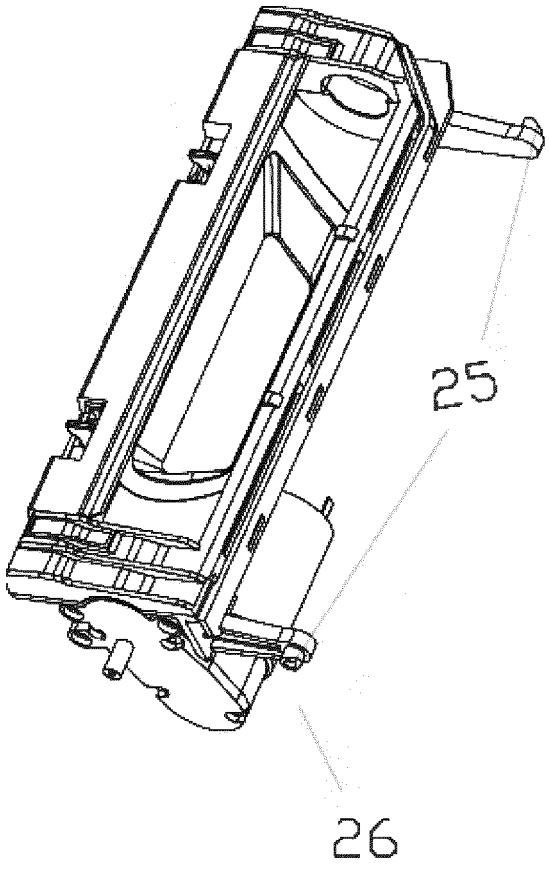

FIG. 10

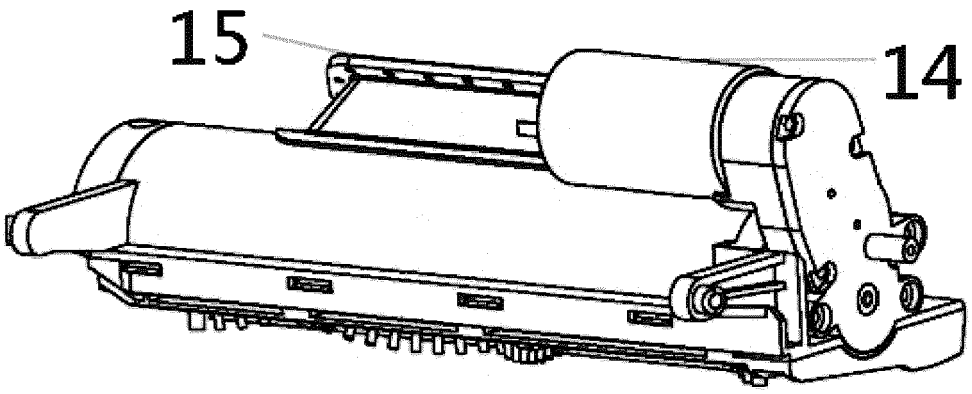

FIG. 11

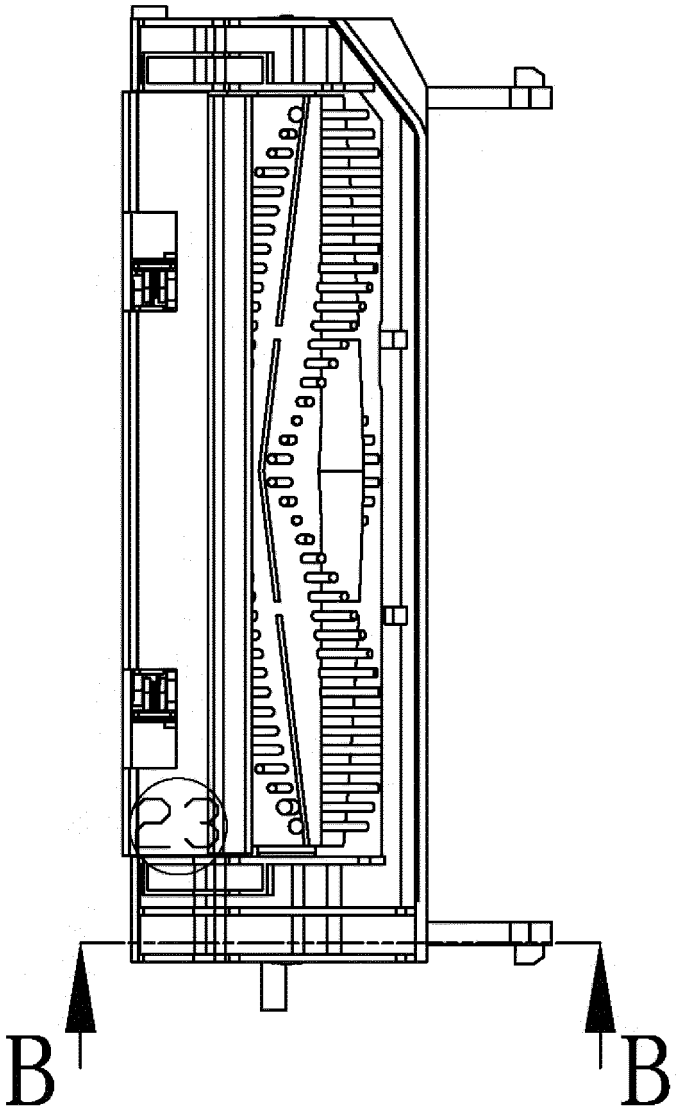

FIG. 12

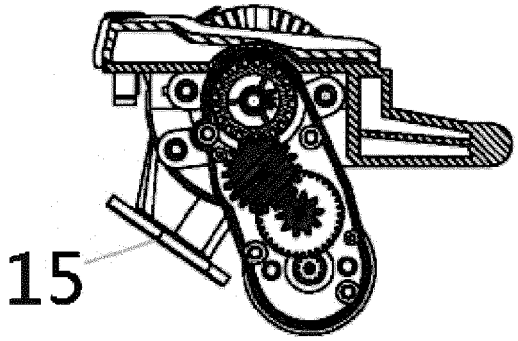

FIG. 13

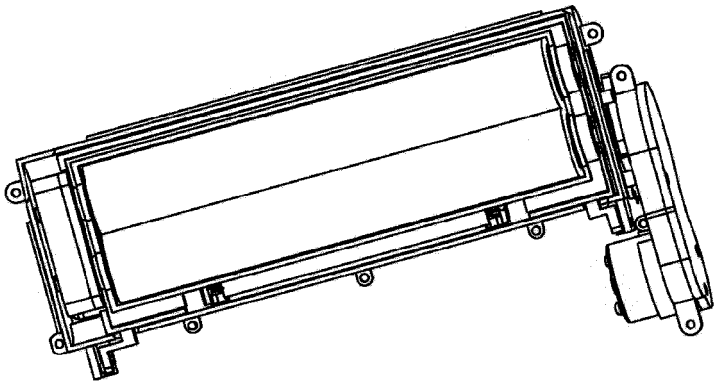

FIG. 14

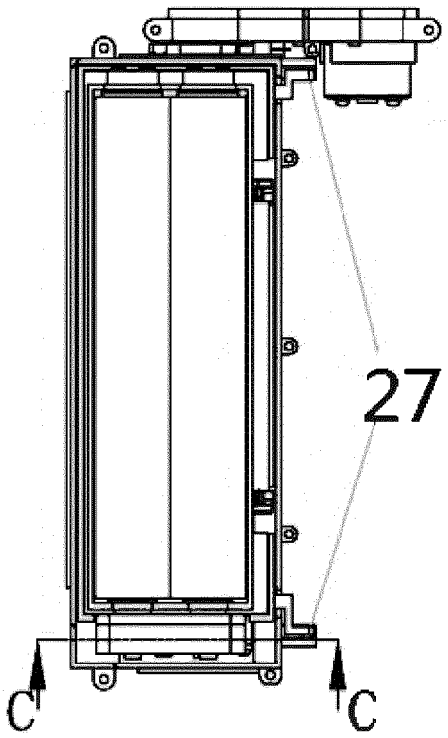

FIG. 15

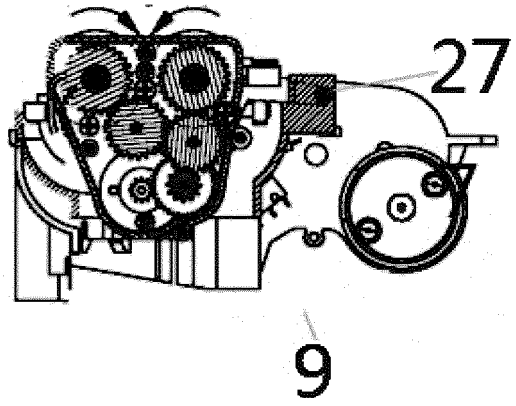

FIG. 16

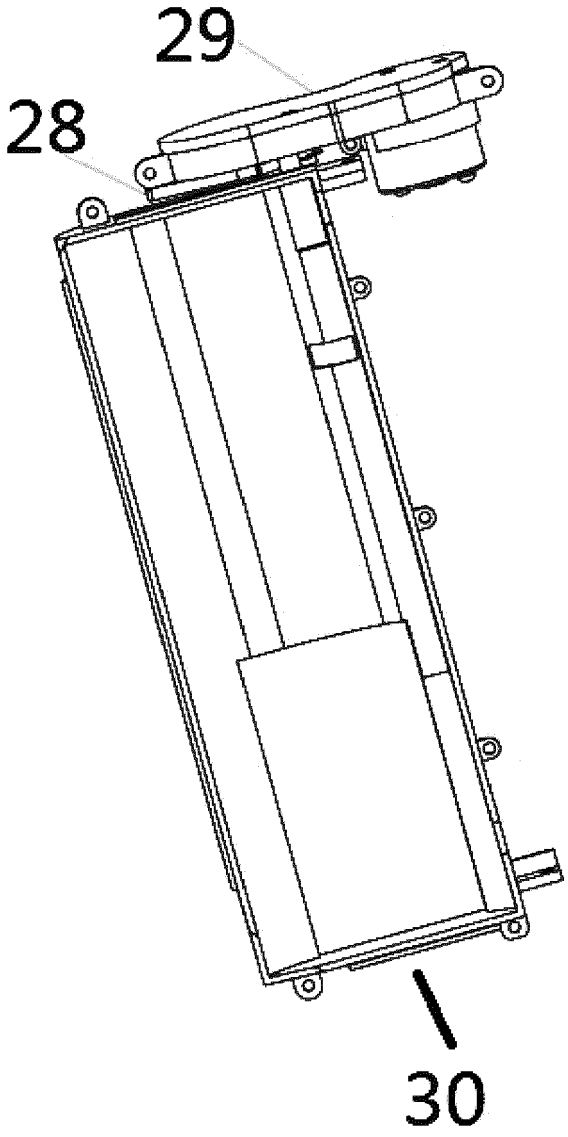

FIG. 17

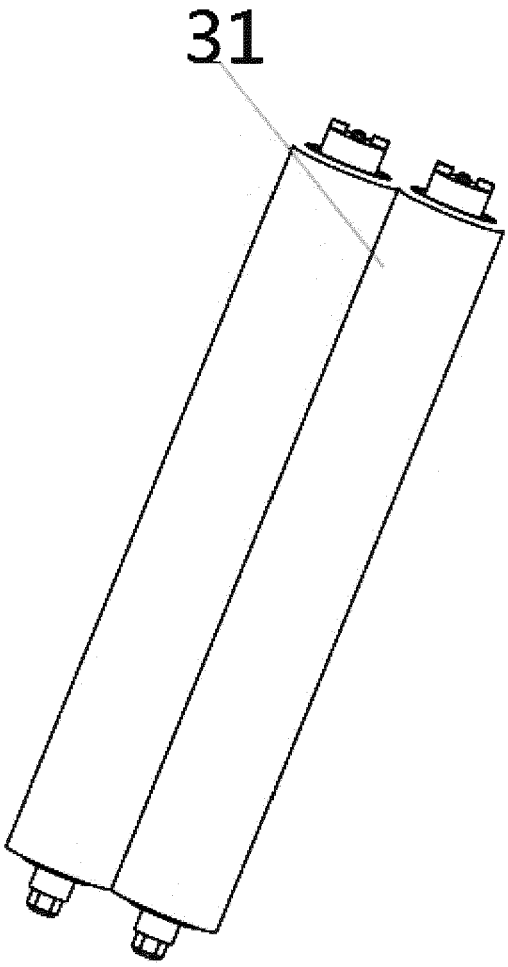

FIG. 18

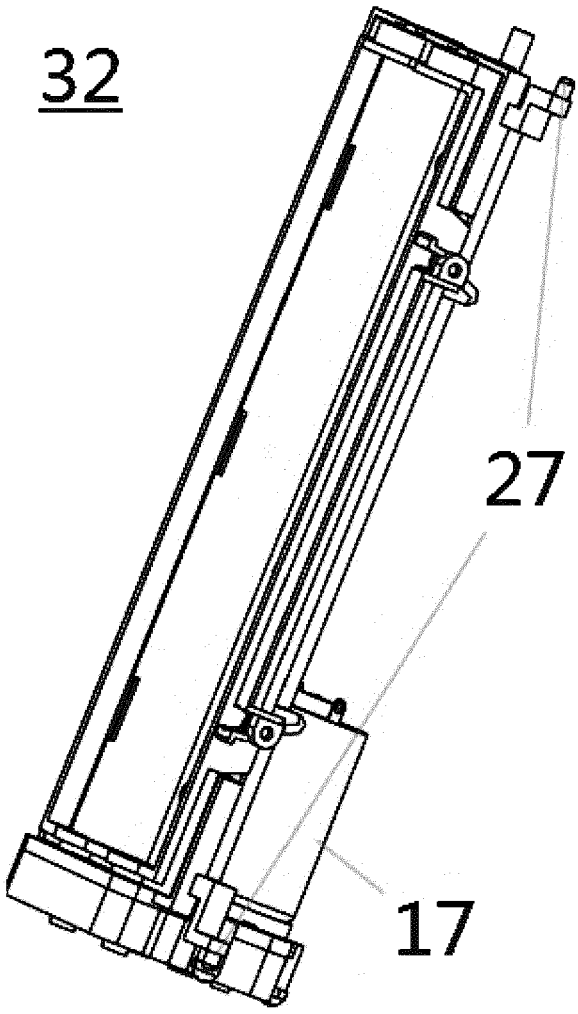

FIG. 19

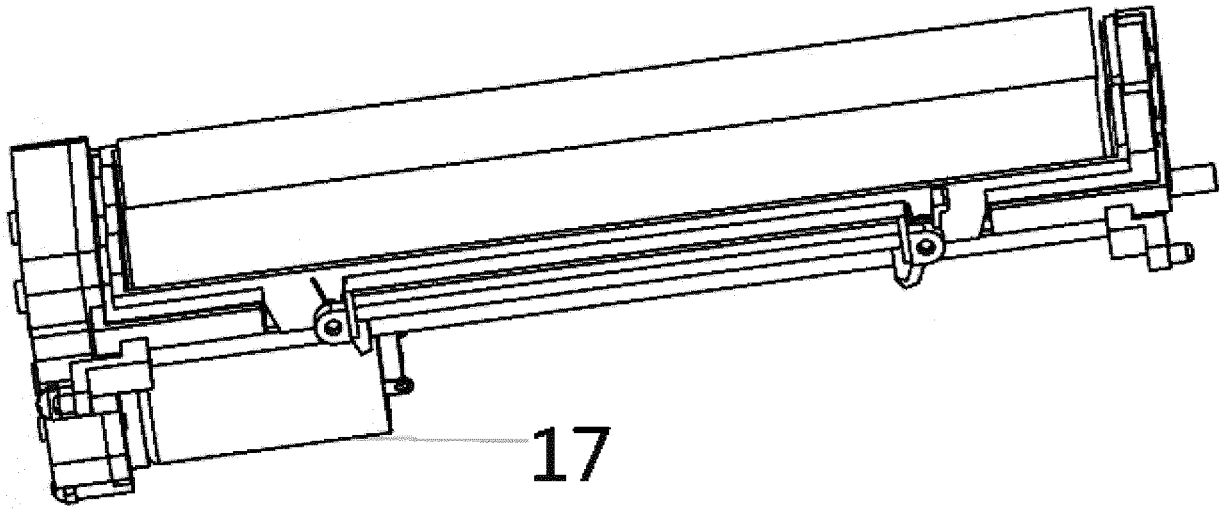

FIG. 20

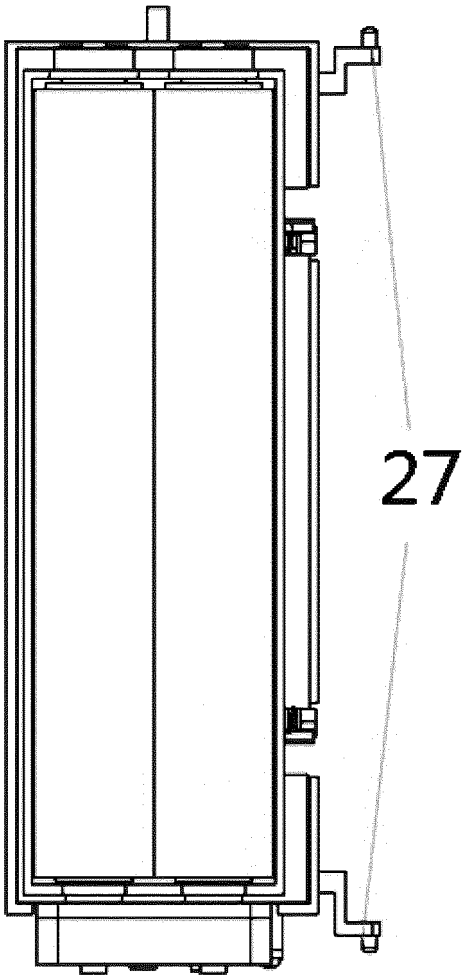

FIG. 21

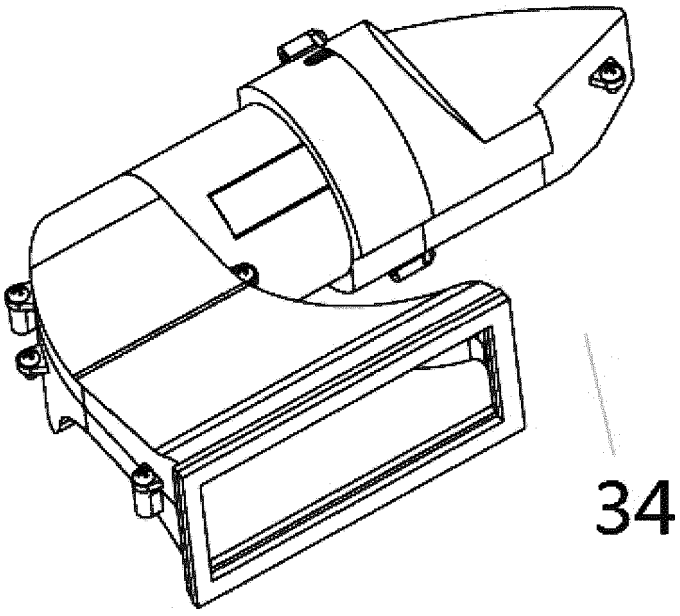

FIG. 22

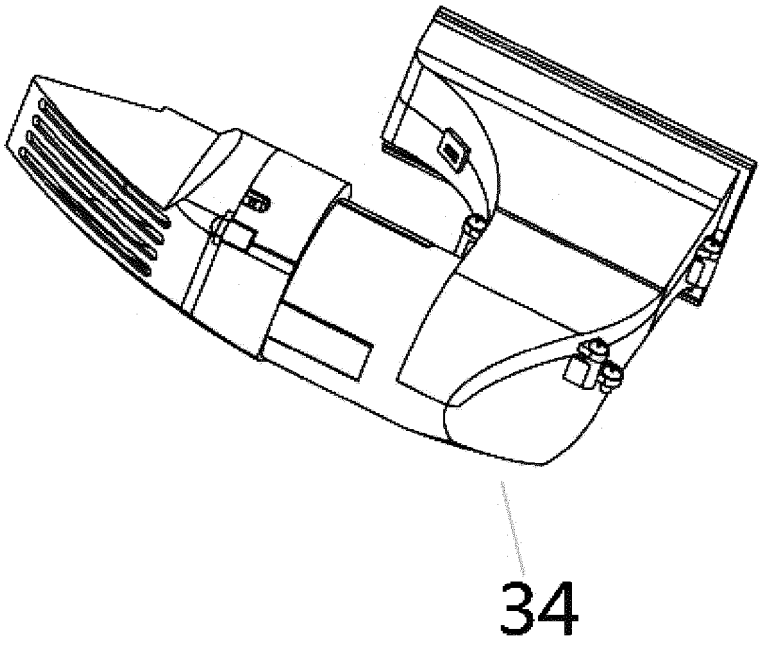

FIG. 23

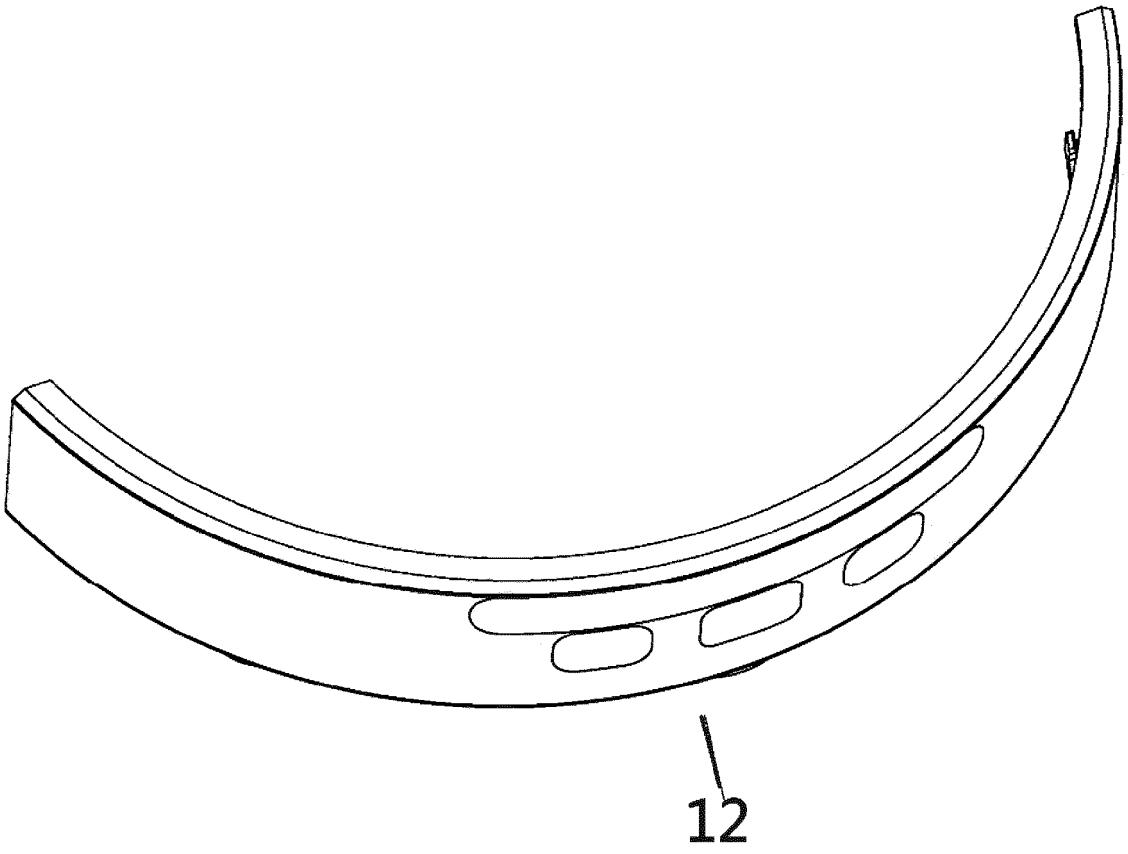

FIG. 24

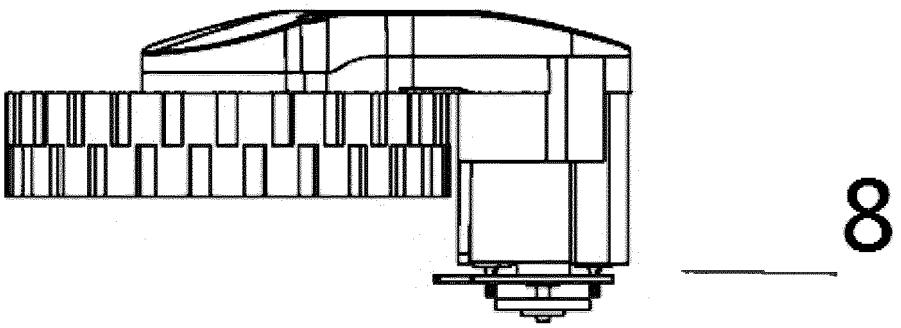

FIG. 25

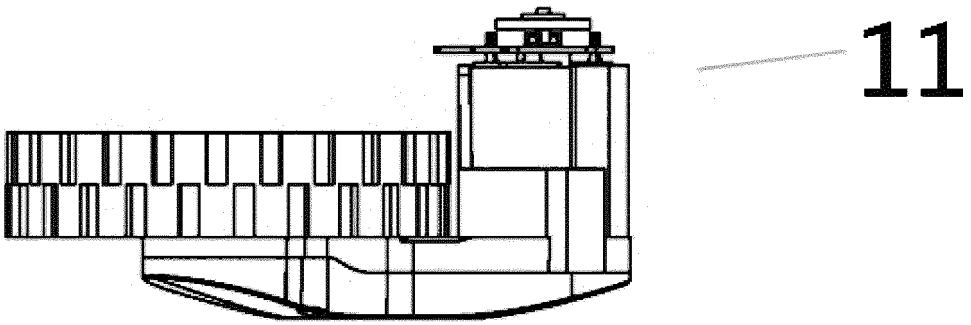

FIG. 26

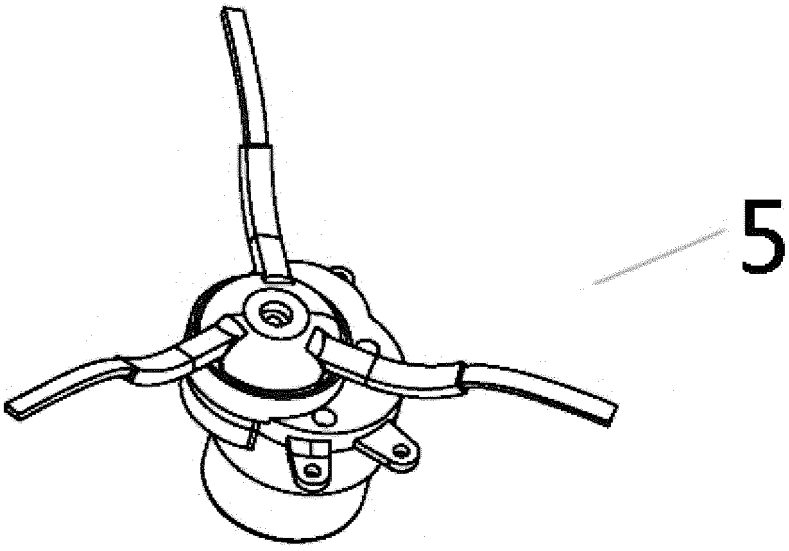

FIG. 27

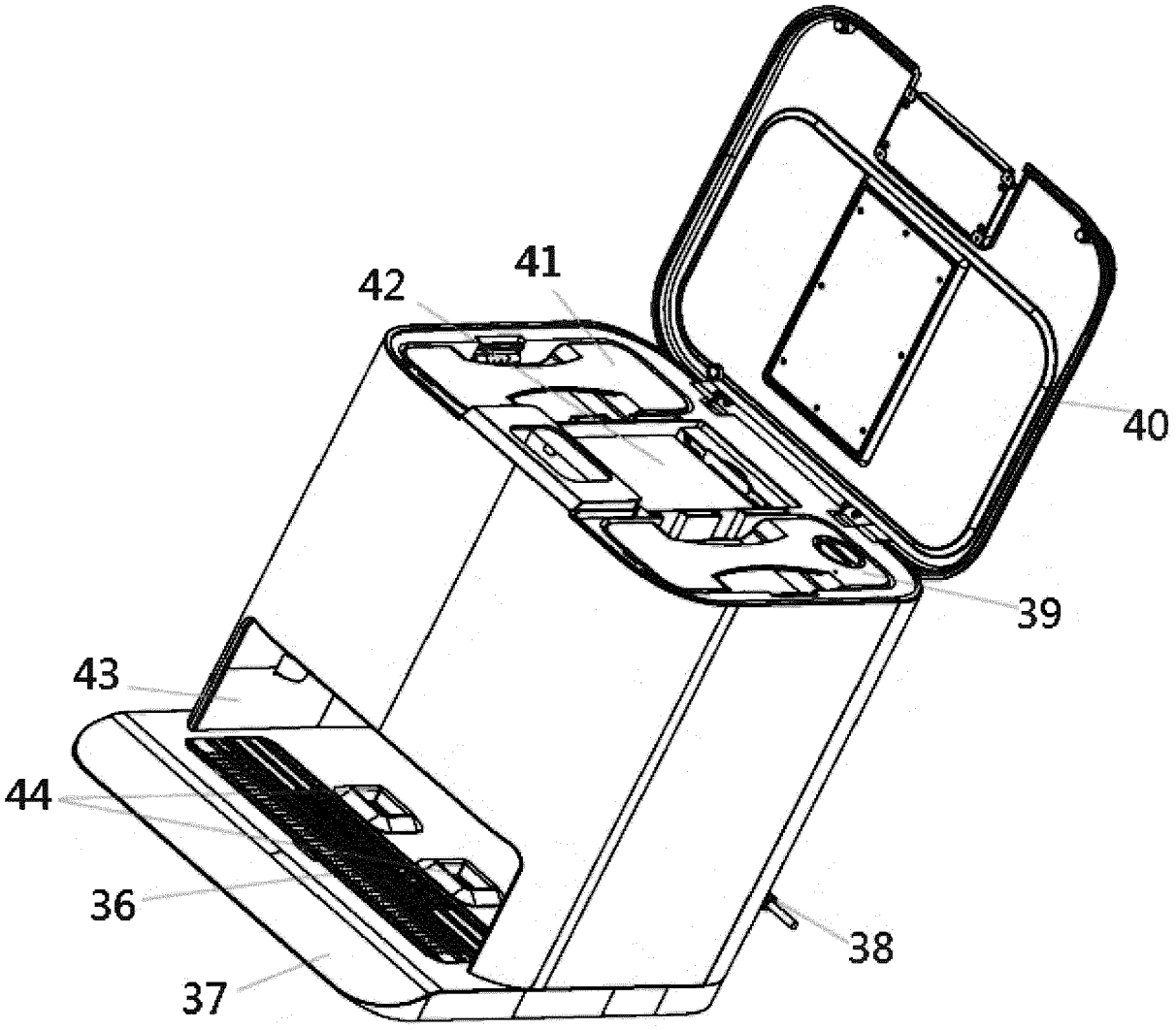

FIG. 28

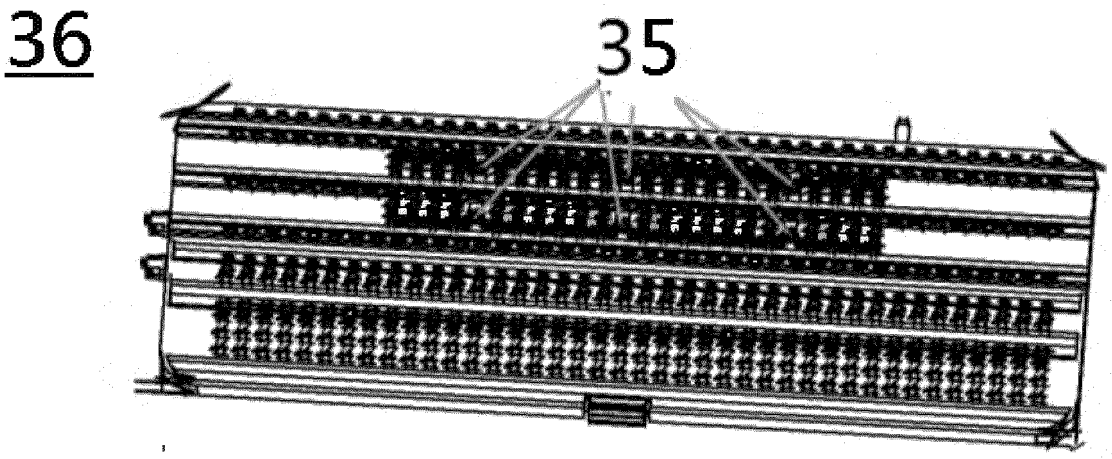

FIG. 29

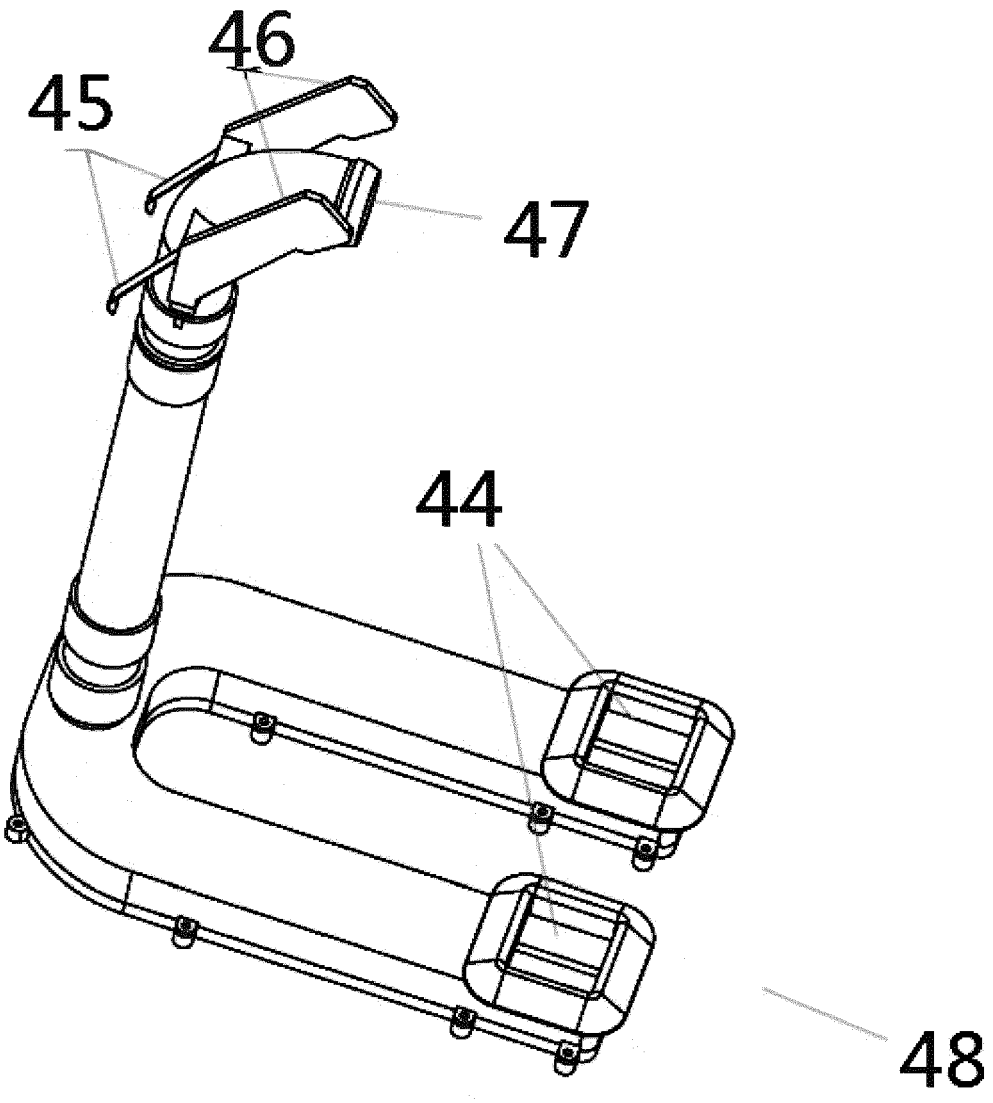

FIG. 30

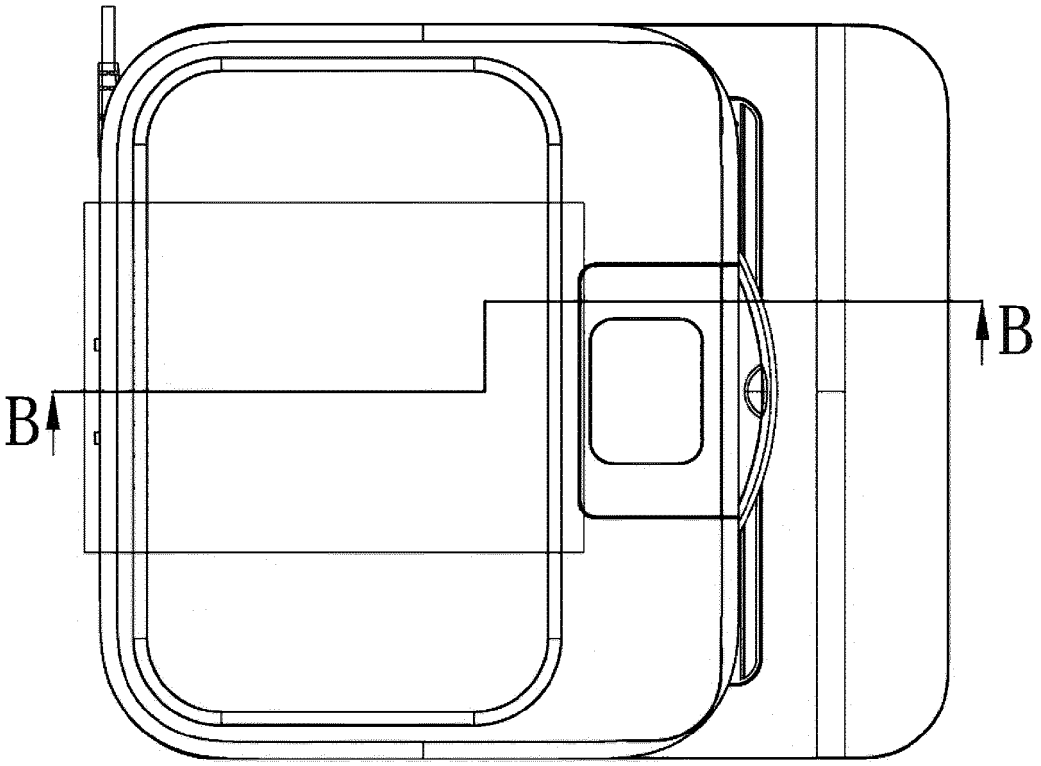

FIG. 31

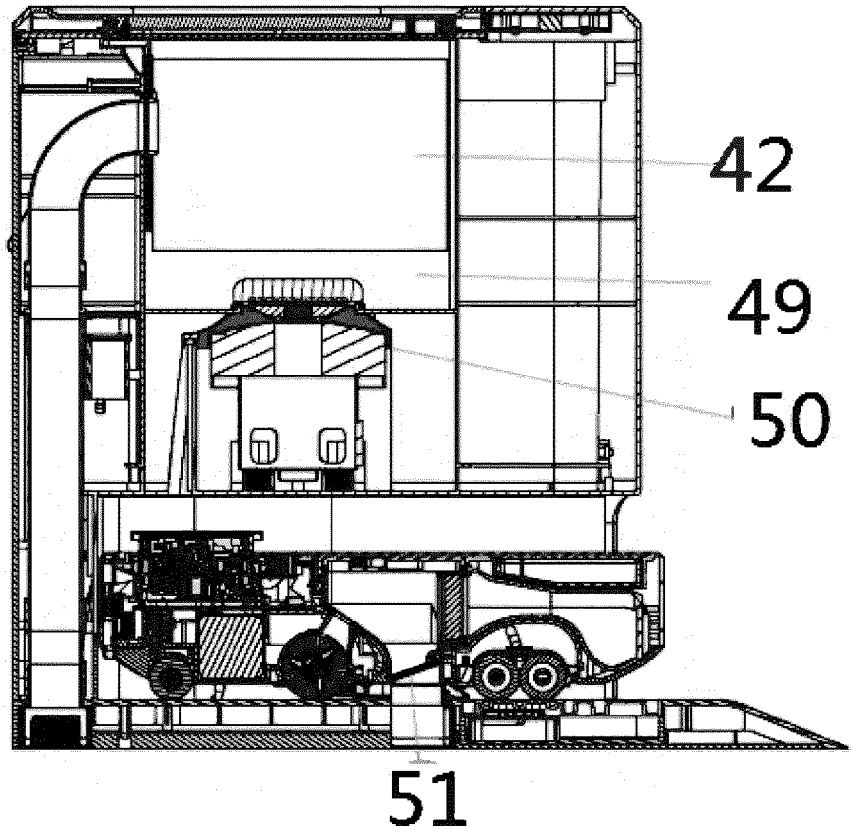

FIG. 32

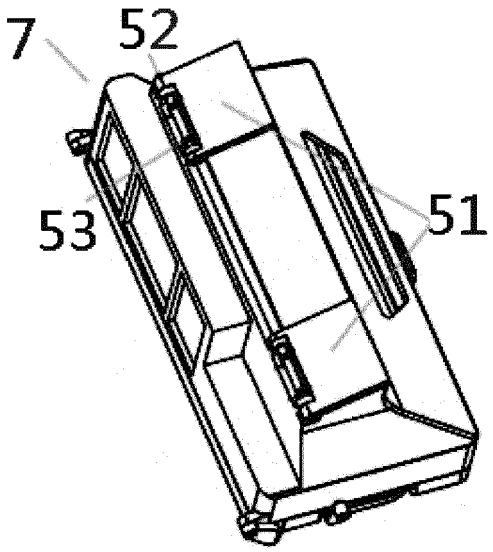

FIG. 33

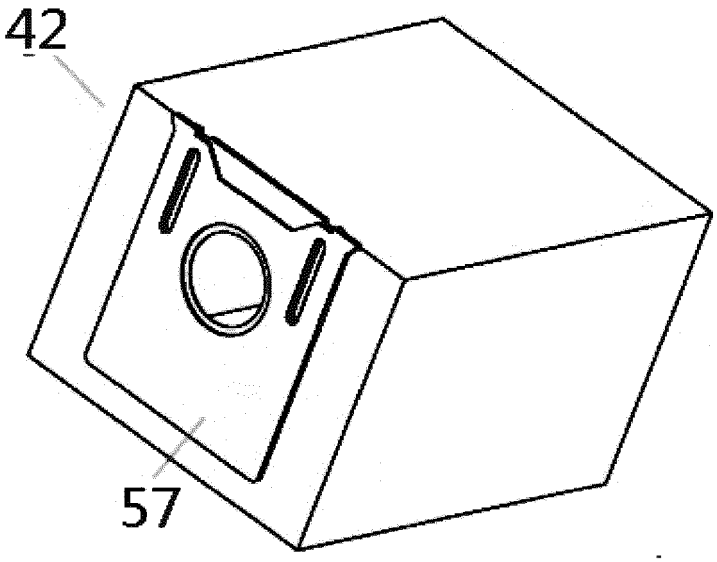

FIG. 34

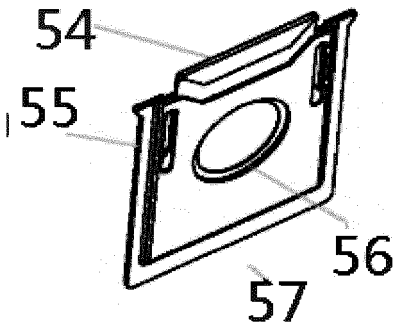

FIG. 35

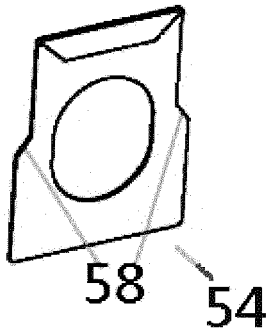

FIG. 36

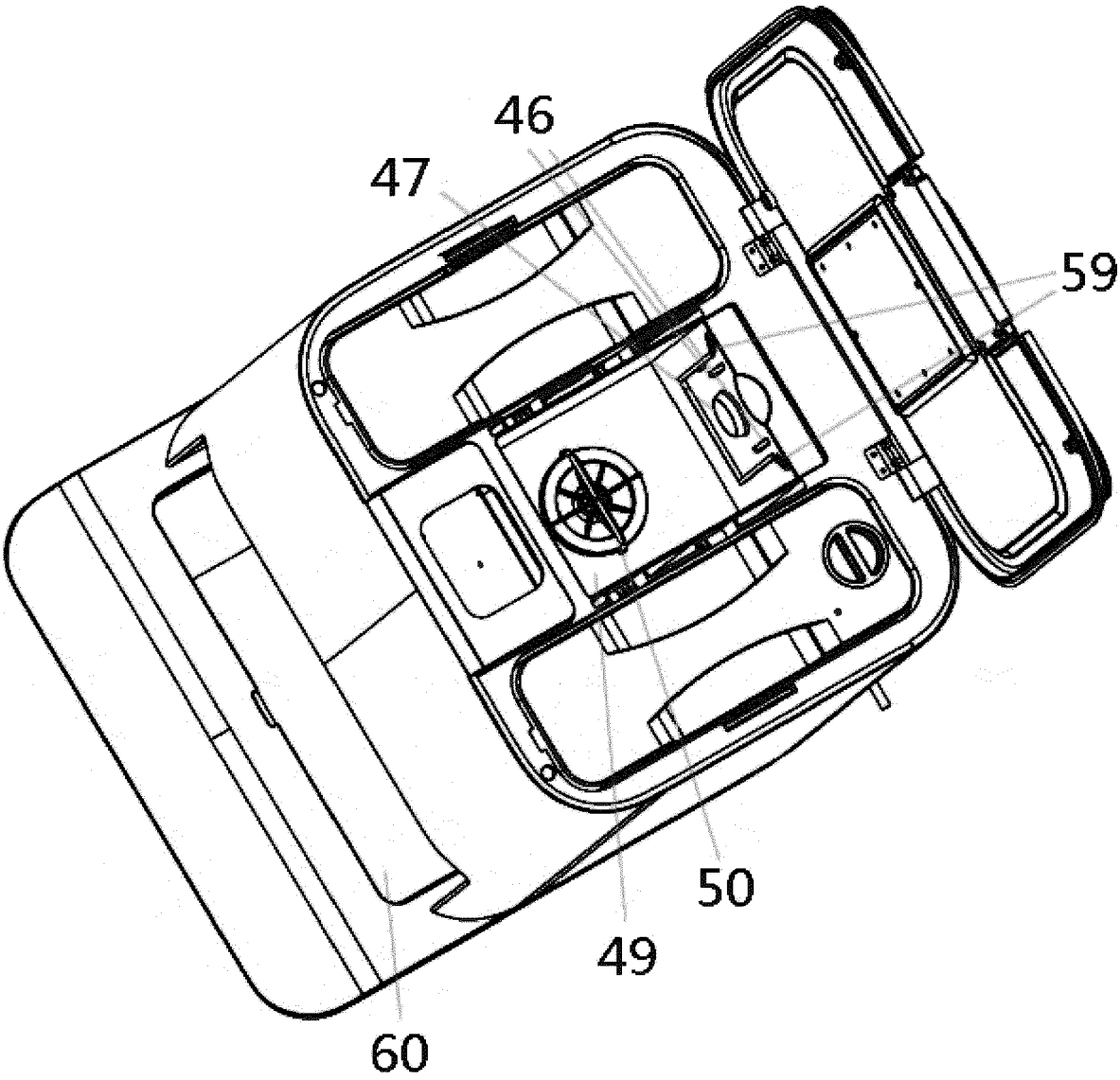

FIG. 37

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EUROPEAN SEARCH REPORT

Application Number
EP 21 19 1654

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	CN 112 006 618 A (HANGZHOU JOLOG ROBOT TECH CO LTD) 1 December 2020 (2020-12-01)	1,4,5	INV. A47L9/14
A	* paragraphs [0055], [0056]; figures *	2,3,6-10	A47L11/24
X	CN 112 545 394 A (HANGZHOU JOLOG ROBOT TECH CO LTD) 26 March 2021 (2021-03-26)	1,4	
A	* paragraph [0044]; figures *	2,3,5-10	

TECHNICAL FIELDS SEARCHED (IPC)

A47L

1 The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
Munich	7 February 2022	Eckenschwiller, A

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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07-02-2022

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
CN 112006618 A	01-12-2020	NONE	
CN 112545394 A	26-03-2021	NONE	

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For more details about this annex : see Official Journal of the European Patent Office, No. 12/82