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Application Data Sheet 37 CFR 1.76		Attorney Docket Number	SHUMAN.122C1
		Application Number	
Title of Invention	TRASH CAN ASSEMBLY		
<p>The application data sheet is part of the provisional or nonprovisional application for which it is being submitted. The following form contains the bibliographic data arranged in a format specified by the United States Patent and Trademark Office as outlined in 37 CFR 1.76.</p> <p>This document may be completed electronically and submitted to the Office in electronic format using the Electronic Filing System (EFS) or the document may be printed and included in a paper filed application.</p>			

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☐	Portions or all of the application associated with this Application Data Sheet may fall under a Secrecy Order pursuant to 37 CFR 5.2 (Paper filers only. Applications that fall under Secrecy Order may not be filed electronically.)
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Application Information:

Title of the Invention	TRASH CAN ASSEMBLY		
Attorney Docket Number	SHUMAN.122C1	Small Entity Status Claimed	☒
Application Type	Nonprovisional		
Subject Matter	Utility		
Total Number of Drawing Sheets (if any)	13	Suggested Figure for Publication (if any)	

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For the purposes of a filing date under 37 CFR 1.53(b), the description and any drawings of the present application are replaced by this reference to the previously filed application, subject to conditions and requirements of 37 CFR 1.57(a).

Application number of the previously filed application	Filing date (YYYY-MM-DD)	Intellectual Property Authority or Country

Publication Information:

☐ Request Early Publication (Fee required at time of Request 37 CFR 1.219)

☐ **Request Not to Publish.** I hereby request that the attached application not be published under 35 U.S.C. 122(b) and certify that the invention disclosed in the attached application **has not and will not be** the subject of an application filed in another country, or under a multilateral international agreement, that requires publication at eighteen months after filing.

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When referring to the current application, please leave the "Application Number" field blank.

Prior Application Status	Pending	Remove	
Application Number	Continuity Type	Prior Application Number	Filing or 371(c) Date (YYYY-MM-DD)
	Continuation of	13/787638	2013-03-06

Application Data Sheet 37 CFR 1.76		Attorney Docket Number	SHUMAN.122C1	
		Application Number		
Title of Invention	TRASH CAN ASSEMBLY			
Prior Application Status	Expired			<input type="button" value="Remove"/>
Application Number	Continuity Type	Prior Application Number	Filing or 371(c) Date (YYYY-MM-DD)	
13/787638	Claims benefit of provisional	61/609233	2012-03-09	
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Statement under 37 CFR 1.55 or 1.78 for AIA (First Inventor to File) Transition Applications

- ☐ This application (1) claims priority to or the benefit of an application filed before March 16, 2013 and (2) also contains, or contained at any time, a claim to a claimed invention that has an effective filing date on or after March 16, 2013.
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When this Application Data Sheet is properly signed and filed with the application, applicant has provided written authority to permit a participating foreign intellectual property (IP) office access to the instant application-as-filed (see paragraph A in subsection 1 below) and the European Patent Office (EPO) access to any search results from the instant application (see paragraph B in subsection 1 below).

Should applicant choose not to provide an authorization identified in subsection 1 below, applicant **must opt-out** of the authorization by checking the corresponding box A or B or both in subsection 2 below.

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☐ B. Applicant **DOES NOT** authorize the USPTO to transmit to the EPO any search results from the instant patent application. If this box is checked, the USPTO will not be providing the EPO with search results from the instant application.

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Title of Invention	TRASH CAN ASSEMBLY		

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Applicant	1	<input type="button" value="Remove"/>	
If the applicant is the inventor (or the remaining joint inventor or inventors under 37 CFR 1.45), this section should not be completed. The information to be provided in this section is the name and address of the legal representative who is the applicant under 37 CFR 1.43; or the name and address of the assignee, person to whom the inventor is under an obligation to assign the invention, or person who otherwise shows sufficient proprietary interest in the matter who is the applicant under 37 CFR 1.46. If the applicant is an applicant under 37 CFR 1.46 (assignee, person to whom the inventor is obligated to assign, or person who otherwise shows sufficient proprietary interest) together with one or more joint inventors, then the joint inventor or inventors who are also the applicant should be identified in this section.			
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☒ Assignee	Legal Representative under 35 U.S.C. 117	Joint Inventor	
Person to whom the inventor is obligated to assign.		Person who shows sufficient proprietary interest	
If applicant is the legal representative, indicate the authority to file the patent application, the inventor is:			
<div></div>			
Name of the Deceased or Legally Incapacitated Inventor: <div></div>			
If the Applicant is an Organization check here. ☒			
Organization Name	simplehuman, LLC		
Mailing Address Information For Applicant:			
Address 1	19850 Magellan Drive		
Address 2			
City	Torrance	State/Province	CA
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Title of Invention	TRASH CAN ASSEMBLY		

Assignee 1				
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Mailing Address Information For Assignee including Non-Applicant Assignee:				
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City	<input type="text"/>	State/Province	<input type="text"/>	
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See 37 CFR 1.4(d) for the manner of making signatures and certifications.

Signature	/Jason R. Swartz/		Date (YYYY-MM-DD)	2017-10-13	
First Name	Jason	Last Name	Swartz	Registration Number	64420
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Application Data Sheet 37 CFR 1.76		Attorney Docket Number	SHUMAN.122C1
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Title of Invention	TRASH CAN ASSEMBLY		

This collection of information is required by 37 CFR 1.76. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 23 minutes to complete, including gathering, preparing, and submitting the completed application data sheet form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

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7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
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TRASH CAN ASSEMBLY**CROSS-REFERENCE TO RELATED APPLICATIONS**

[0001] This application is a continuation of U.S. Patent Application No. 13/787,638, filed March 6, 2013, which claims the priority benefit under 35 U.S.C. § 119(e) of U.S. Provisional Patent Application No. 61/609,233, filed March 9, 2012. The entirety of each of the aforementioned applications is incorporated herein by reference.

BACKGROUNDField

[0002] Some embodiments relate to power transfer devices, such as mechanisms for operating lids or doors for receptacles.

Description of the Related Art

[0003] Receptacles and other devices with mechanisms for transferring power to a subcomponent, such as a lid or a door, are used in a variety of different settings. For example, in both residential and commercial settings, trash cans and other devices often have lids for protecting or preventing the escape of the contents of the receptacle. Some trash cans include lids or doors to prevent odors from escaping and to hide the trash within the receptacle from view. Additionally, the lid of a trash can help prevent contamination from escaping from the receptacle.

[0004] Some commercially available trash cans have powered or manually operated lids. Such cans generally include a motor that drives a gear assembly, which in turn drives the lid open and closed. Such trash cans can include a sensor positioned on or near the lid. Such a sensor can be configured to detect movement, such as a user's hand being waived near the sensor, as a signal for opening the lid. When such a sensor is activated, a motor within the trash receptacle opens the lid or door and thus allows a user to place items into the receptacle. Afterwards, the lid can be automatically closed.

[0005] However, certain conventional power or manually operated lids present some difficulties. For example, users of current trash cans with power operated lids can experience problems if the trash within the receptacle or can is piled higher than the level of the lid itself. If the trash or other material within the can is higher than the level of the lid

itself, the lid will be unable to completely close. This can cause the motor or batteries to wear down, continue running, and/or ultimately fail. It can also force the user to reset the controller, remove trash, or manually compress the trash until the lid can be closed.

[0006] A number of other problems are associated with the deployment, use, and removal of receptacle liners, such as trash bags. A common problem is associated with maintaining the trash bag suspended at the top of the trash open with the mouth of the trash bag opened. For example, a user typically needs to fold the top edge of the trash bag over the top edge of the trash can or its internal liner to maintain the mouth of the trash bag opened at the top of the trash can or an internal liner. However, the weight of the waste materials deposited into the trash bag may cause the trash bag to slip from the mouth of the trash can and fall into the interior of the trash can. This can result in the undesirable spillage of the waste material inside the trash bag and/or the inconvenience of having to reach into the interior of the trash can to retrieve and reposition the bag onto the trash can.

[0007] Further, problems can exist when a user manually opens and closes the lid or door of a trash receptacle configured to transfer power to the lid or door. Whether intentional or accidental, the act of directly manually opening or closing the lid (e.g., not opened and/or closed by the motor or another power transmission device, such as a foot pedal) may, for example, wear down, strip or lead to the failure of the components and parts of the power operated trash receptacle, such as the motor or gears. For instance, when the lid is manually operated, certain of the gears in connection with the lid are encouraged to move (e.g., rotate and/or translate). However, because the motor may be relatively difficult to rotate when not being operated, the motor may inhibit one or more of the gears from moving. Thus, when the lid is manually operated, a stress can result between the gears that the lid is urging to move and the gears that the motor is inhibiting from moving. Such a stress can result in damage to the gears, motor, lid, or other components of the receptacle. For instance, such stress can strip one or more teeth of the gears. Damage to the gears can, for example, result in reduced control over the motion of the lid, cause noise, and even inhibit or prevent the motor from operating the lid.

SUMMARY

[0008] Various embodiments of a trash can assembly (e.g., a receptacle configured to receive refuse, recycleable materials, or otherwise), and related methods, are provided. In some embodiments, the trash can assembly includes a body component, such as a shell or housing. In some embodiments, the body component is made of a metal, such as stainless steel. The body component can be configured to receive a portion of a removable liner, such as a trash bag, bin bag, bin liner, or otherwise.

[0009] Various embodiments of the trash can assembly include a trim member, such as a plastic or metal edge, border region, or otherwise. The trim member can be pivotally coupled (e.g., rotatably, hingedly, or otherwise) with the body. The trim member can be configured to move between a closed position and an open position. When the trim member is in the closed position and an upper portion (e.g., edge, ridge, rim, or otherwise) of the removable liner is positioned over an upper edge (e.g., lip, rim, or otherwise) of the body component, the trim member can be configured to engage the upper edge of the body component to secure (e.g., pinch, grasp, or otherwise) the upper portion of the removable liner between the trim member and the upper edge of the body component.

[0010] In some embodiments, the trash can assembly includes a lid, such as a cover, top, closure member, or otherwise. The lid can be pivotally coupled with the body component and configured to move between a first position (e.g., closed or shut) and a second position (e.g., open). In some implementations, a periphery (e.g., an edge and/or radially outer portion) of the lid can be generally received in the trim when the trim is in the closed position and the lid is in the first position, the periphery of the lid being positioned generally outside of the trim when the trim is in the closed position and the lid is in the second position. In some embodiments, the lid is made of the same material as the body. In some embodiments, the lid is made of the same material as the trim member.

[0011] In some embodiments, the trim member includes a wall extending generally downwardly (e.g., generally transverse direction to a top surface of the trim member, generally toward a base of the trash can assembly, or otherwise) from a top surface of the trim member. In certain variants, the trim member includes a liner retention feature (e.g., one or more hooks, wings, detents, snaps, magnets, or otherwise) positioned on an

inside surface of the wall. In some embodiments, the liner retention feature includes an inwardly (e.g., radially inwardly, in a direction generally toward the body, or otherwise) extending flap positioned on an inner surface of the wall. The inwardly extending flap can be configured to receive a portion of the upper edge of the body component. For example, in some embodiments, the upper edge of the body component includes an annular lip and the inwardly extending flap includes an engagement element (e.g., recess, aperture, channel, protrusion, or otherwise) configured to secure a portion of the removable liner between the flap and the annular lip.

[0012] In some embodiments, the trim member includes a retaining mechanism, such as a latch, detent, or other securing and/or holding device. The retaining mechanism can be configured to maintain the trim member in the open position, thereby allowing a user to mount the removable liner in the trash can assembly. In some embodiments, the retaining mechanism includes a first cam structure (e.g., arm, wheel, shaft, cylinder, gear, etc.) and a second cam structure. The first cam structure can be configured to be received in a holding feature (e.g., a recess, channel, or otherwise) of the second cam structure as the trim member moves (e.g., rotates, slides, translates, or otherwise) toward the open position.

[0013] In some embodiments, the trash can assembly includes a power operated driving mechanism, such as a motor and shaft. The power operated driving mechanism can be configured (e.g., with a linkage or gearing) to move the lid between the first and second positions. In some implementations, the power operated driving mechanism is activated by a sensor, such as an infrared sensor, proximity sensor, ultrasonic sensor, or otherwise. For example, a signal from the sensor can be provided to a controller, which can be configured to regulate the operation of the power operated driving mechanism to move the lid between the first and second positions based on the signal. In certain variants, the sensor is configured to sense (e.g., detect, monitor, measure, or otherwise) the presence and/or lack thereof of an object or user in a vicinity of the trash can assembly. For example, the sensor can sense the presence of a user generally in front and/or above the trash can assembly, and thus signal for the lid to be opened. Some implementations of the sensor are configured to sense the presence and/or lack thereof of an object or user in a volume of space relative to the trash can assembly, such as within a generally conical volume of space above the trash can assembly.

In some embodiments, at least one of the power operated driving mechanism and the sensor is deactivated (e.g., generally depowered, turned off, or otherwise) when the trim member is in the open position. Certain such implementations can, for example, reduce the likelihood of false positive readings and/or can conserve energy.

[0014] In accordance with some implementations, a trash can assembly includes a body component. The trash can assembly can have a lid mounted relative to the body component. The lid can be configured to move between open and closed positions. In some variants, the lid has a lid driving mechanism. Certain embodiments of the trash can assembly include a power operated driving mechanism that includes a motor coupled (e.g., directly or indirectly) with a shaft. In various embodiments, the motor is powered (e.g., by alternating current, direct current, or otherwise). In some implementations, the motor is configured to receive electrical power from one or more batteries. In some implementations, solar panels provide power to at least some components of the trash can, such as the motor.

[0015] Certain implementations of the trash can assembly include a clutch mechanism, such as a selectively engageable power and/or torque transfer member. In some variants, the clutch mechanism can be engageable with (e.g., abutted against, securable with, connectable to, or otherwise) the lid driving mechanism. The clutch mechanism can be configured to receive torque from the motor, such as via the shaft, and to transmit the torque to the lid driving mechanism to move the lid between the open and closed positions. The lid driving mechanism and the clutch member can be configured to allow a user to manually move (e.g., push, pull, rotate, translate, lift, etc.) the lid between the open and closed positions substantially without applying a force (e.g., torque) to at least one of: the motor, the shaft, and the clutch mechanism. In some embodiments, the lid driving mechanism and the clutch member can be configured to allow a user to manually move the lid between the open and closed positions substantially without applying a force (e.g., torque) to at least two of: the motor, the shaft, and the clutch mechanism (e.g., the motor and the shaft, the shaft and the clutch, and/or the motor and the clutch). In certain implementations, the lid driving mechanism and the clutch member can be configured to allow a user to manually move the lid between the open and closed positions substantially without applying a force (e.g., torque) to the motor, the shaft, and the clutch mechanism.

[0016] In some embodiments, the lid driving mechanism is attached to a bottom surface of the lid, such as an underside, back, and/or surface generally directed toward the base of the trash can assembly. The lid driving mechanism can be configured to directly or indirectly abut (e.g., contact, touch, or otherwise) with the clutch mechanism. In some embodiments, when the clutch mechanism is operated (e.g., rotated by the shaft and/or the motor), such abutment can result in the lid driving mechanism being moved (e.g., rotated), thereby moving the lid between the open and closed positions.

[0017] According to some implementations, the lid driving mechanism includes first and second flanges, such as flaps, wings, protrusions, or otherwise. The flanges can be configured to abut with first and second torque transmission members (e.g., arms, shafts, etc.) of the clutch mechanism, respectively. In certain variants, at least one of the first and second flanges extend radially inwardly (e.g., generally toward the body, generally toward a radial center of the trash can assembly, or otherwise). According to certain variants, rotation of the clutch mechanism results in rotation of the first and second flanges, which in turn results in movement (e.g., rotation) of the lid between the open and closed positions. In some embodiments, the first and second flanges are positioned on the lid. For example, the first and second flanges can be molded or otherwise formed with the lid, or joined (e.g., by welding or adhesive) with the lid.

[0018] Some implementations include at least one circumferential space (e.g., a gap or recess) between the first and second flanges. In certain embodiments, at least one of the first and second torque transmission members is configured to be positioned within the at least one circumferential space. Certain embodiments include first and second circumferential spaces between the first and second flanges, with the first torque transmission member being positioned in the first circumferential space and the second torque transmission member being positioned in the second circumferential space.

[0019] In some embodiments, the first and second torque transmission members have at least one arm extending from a central body of the clutch mechanism. For example, some embodiments include first and second arms extending radially outward from the central body. In some variants, at least one of the arms has a first surface and second surface. The first surface can be configured to abut with the first flange and the second surface can be

configured to abut with the second flange. In certain implementations, when the first surface is abutted with the first flange, a first circumferential distance is defined between the second surface (e.g., non-abutted surface) and the second flange. In some embodiments, the first circumferential distance is greater than or equal to the amount of rotation of the lid between the closed and open positions. For example, in certain variants, the rotation of the lid between the closed and open positions can be at least about 80° and the circumferential distance can be greater than or equal to about 80°. In some embodiments, the circumferential distance being greater than or equal to the amount of rotation of the lid between the closed and open positions facilitates a user being able to manually (e.g., without operating the driving mechanism, etc.) open and/or close the lid without applying a force to the arms.

[0020] In some embodiments, the trash can assembly includes one or more lid position sensing elements, such as flagging members, proximity sensors, interrupt-type sensors, potentiometers, or otherwise. In certain implementations, the lid position sensing elements are communicatively (e.g., electrically connected, etc.) connected with a controller, such as a processor or other electrical circuit configured to execute one or more algorithms. The controller can be configured to determine whether the lid is in the open or closed position, such as based on a signal from the lid position sensing elements.

[0021] In accordance with some embodiments, a trash can assembly includes a body component and a lid that is mounted relative to the body component and is configured to move between open and closed positions. The trash can assembly can include a driving mechanism operable to move the lid between the open and closed positions. Some embodiments of the driving mechanism can include a motor, a shaft, and an end member. The motor can be configured to rotate the shaft, and the shaft can be configured to rotate the end member. In some embodiments, the end member is generally rigidly coupled (e.g., fixed or secured) with the shaft such that the end member is generally prevented from rotating relative to the shaft.

[0022] In some variants, the driving mechanism includes a clutch mechanism. The clutch mechanism can be rotatably engageable (e.g., able to be engaged and disengaged) with the lid. The driving mechanism can be adapted to receive torque from the end member, so as to move the lid between the open and closed positions. The clutch mechanism can be

configured to move (e.g., rotate, translate, slide, etc.) relative to the end member when the lid is moved between the opened and closed positions generally without operation of the driving mechanism (e.g., generally without rotational movement of the motor and/or the shaft relative to the body).

[0023] In some embodiments the driving mechanism includes a biasing member, such as a spring, elastic member or otherwise. The biasing member can be configured to bias (e.g., to apply a force to) the clutch mechanism into engagement (e.g., contact, abutment, securement, or otherwise) with the end member. In certain implementations, the bias of the biasing member can facilitate torque from the motor being transmitted to the clutch mechanism via the engagement between the end member and the clutch mechanism.

[0024] In some embodiments, the clutch mechanism is configured to move (e.g., translate and/or rotate) relative to the end member and/or the shaft. For example, in some embodiments, the clutch mechanism can move relative to the end member and/or the shaft when the lid is moved between the opened and closed positions generally without operation of the driving mechanism, such as when the lid is opened or closed manually (e.g., by hand). In some embodiments, when the clutch mechanism moves relative to the end member and/or the shaft, the clutch mechanism translates toward the motor along a portion of a longitudinal length of the shaft and/or rotates relative to the end member. In some embodiments, when movement of the clutch mechanism relative to the end member and/or the shaft ceases, the biasing member is configured to move (e.g., to translate and/or rotate) the clutch mechanism towards and/or into engagement with the end member.

[0025] In some embodiments, the clutch mechanism and the end member include corresponding cam surfaces. In certain implementations, the corresponding cam surfaces are configured to allow the clutch mechanism to translate and rotate relative to the end member. In some embodiments, the clutch mechanism includes a first inclined cam surface and the end member includes a second inclined cam surface. The first and second inclined cam surfaces can be configured to allow mating engagement between the clutch mechanism and the end member. In some embodiments, when the lid is moved between the opened and closed positions generally without operation of the driving mechanism, the first and second inclined cam surfaces slide (e.g., translate and/or rotate) relative to each other.

BRIEF DESCRIPTION OF THE DRAWINGS

[0026] The above-mentioned and other features of the trash cans disclosed herein are described below with reference to the drawings of certain embodiments. The illustrated embodiments are intended to illustrate, but not to limit the disclosure. The drawings contain the following Figures:

[0027] Figure 1 is a top, front, and left side perspective view of an embodiment of an enclosed receptacle, with a lid and a trim member in a closed position.

[0028] Figure 2 is an enlarged top, front, and left side perspective view of the receptacle illustrated in Figure 1, with the lid in an open position and the trim member is the closed position.

[0029] Figure 3 is a top, rear, and right side perspective view of the receptacle shown in Figure 1.

[0030] Figure 4 is an exploded top, front, and left side perspective view of an embodiment of an enclosed receptacle with the lid closed.

[0031] Figure 5 is an enlarged rear perspective view of the receptacle shown in Figure 1, with a back cover removed.

[0032] Figure 6 is an enlarged top, rear, and left side perspective view of the receptacle illustrated in Figure 1, with the lid and trim member removed to show a lifting mechanism.

[0033] Figure 7 is an enlarged bottom view of a portion of the trim member of Figure 1.

[0034] Figure 8 is an enlarged partial cross sectional view of the receptacle of Figure 1.

[0035] Figure 9 is an enlarged partial rear perspective view of the receptacle illustrated in Figure 1, with the back cover removed.

[0036] Figure 10 is an enlarged top, rear, and left side perspective view of the receptacle illustrated in Figure 1, with the lid and trim member in the open position.

[0037] Figure 11 is an enlarged front, bottom, and left side perspective view of the lid of Figure 1.

[0038] Figure 12 is an enlarged perspective view of the motor and gear drive mechanism of the lifting mechanism illustrated in Figure 6.

[0039] Figure 13 is an enlarged partial rear perspective view of the receptacle illustrated in Figure 1, with the back cover removed.

DETAILED DESCRIPTION OF CERTAIN EMBODIMENTS

[0040] The various embodiments of a system for transmitting power for opening and closing a lid or door of a receptacle, such as a trash can, or other device is disclosed in the context of a trash can. The present disclosure describes certain embodiments in the context of a trash can due to particular utility in this context. However, the subject matter of the present disclosure can be used in many other contexts as well, including, for example, commercial trash cans, doors, windows, security gates, and other larger doors or lids, as well as doors or lids for smaller devices such as high precision scales, computer drives, etc. The embodiments and/or components thereof can be implemented in powered or manually operated systems.

[0041] With reference to Figures 1-3, a trash can assembly 20 can include a body or shell component 22 and lid 24 and other modular pieces or components. The trash can assembly 20 is generally easy to assemble and maintain. It can have minimal parts and have a compact design. Lid 24 can include door components, such as an air filter (not shown). The trash can assembly 20 can be configured to rest on a floor, and can be of varying heights and widths depending on, among other things, consumer need, cost, and ease of manufacture. Additional details and examples of trash can assemblies that can be used with, or instead of, components discussed herein are provided in U.S. Patent Application Publication No. 2011/0220647, filed March 4, 2011, and U.S. Patent Application Publication No. 2009/0194532, filed February 1, 2008, the entirety of each of which is incorporated herein by reference.

[0042] The trash can assembly 20 can include the body component 22. In some embodiments, the trash can assembly can be configured to receive a liner or trash bag (not shown), which can be retained at least partly within the body component 22. For example, an upper peripheral edge of the body component 22 can be configured to support an upper peripheral edge of the liner such that the liner is suspended and/or restrained by its upper

peripheral edge within the body component 22. In some embodiments, the trash can assembly 20 can include a liner support member (not shown) supported by the body component 22 and configured to support the liner at least partly within the interior of the body component 22. In some embodiments, the body component 22 is configured such that the liner can be seated on a lower portion of the body component 22.

[0043] With reference to Figure 4, in some embodiments, the body component 22 includes an upper edge 26. As illustrated, the upper edge 26 of the body component 22 can be rolled, include an annular lip, or otherwise include features that extend outwardly from a generally vertical wall of the body component 22. In some embodiments, the upper edge 26 has a generally rounded cross-section. Other designs can also be used.

[0044] The body component 22 can assume many configurations. The non-limiting embodiments of Figures 1-3 illustrate the body component 22 having a generally semi-circular configuration with a rear wall 28 and a curved, front wall 30. However, other configurations can also be used, for example, rectangular. The liner or trash bag (not shown) can have the same general configuration, or a different configuration from the body component 22. The body component 22 can be made from plastic, steel, stainless steel, aluminum or any other material.

[0045] As illustrated in Figure 4, the trash can assembly 20 can include a base portion 44. The base portion 44 can have a generally annular and curved skirt upper portion and a generally flat lower portion for resting on a surface, such as a kitchen floor. The base portion 44 of the trash can assembly 20 can be made integrally, monolithically, or separate from the body component 22. In some implementations, the base portion 44 comprises plastic, metal (e.g., steel, stainless steel, aluminum, etc.) or any other material. In some embodiments, such as those in which the body component 22 is metal (e.g., stainless steel), the base portion 44 can be a plastic material. In some embodiments, the base portion 44 includes projections 40 that are open or vented to the ambient environment (e.g., thorough the generally flat lower portion of the base portion 44), as will be discussed in further detail below. As illustrated, certain embodiments of the base portion 44 include a generally centrally located passage thorough the generally flat lower portion of the base portion 44.

[0046] In some embodiments, the base portion 44 can be connected with or attached to the body component 22 by connection components 46, such as hooks and/or fasteners (e.g., screws). For example, in some embodiments, the base portion 44 includes hooked tabs that are configured to connect with a lower edge (e.g., a rolled edge) of the body component 22. In some embodiments, the hooked tabs engage the lower edge of the body component 22, such as by snap-fit connection. In some embodiments, the base portion 44 and the body component 22 are joined with adhesive, welding, hooks and similar attachment mechanisms.

[0047] In some embodiments, a liner insert 100 is connected with, or attached to, the base portion 44. In some embodiments, the liner insert 100 can have support members, such as legs 48, which can support and/or elevate the liner insert 100 above an interior bottom of the base portion 44. In some embodiments, the legs 48 are joined with the base portion 44 (e.g., with fasteners, welding, etc.).

[0048] In some embodiments, the liner insert 100 is configured to generally support and/or cradle a lower portion of a trash bag disposed in the trash can assembly 20. For example, as illustrated, the liner insert 100 can be generally concave or bowl-shaped. In some embodiments, the liner insert 100 is configured to protect a trash bag from rupture or damage and retain spills. For instance, the liner insert 100 can have a generally smooth surface to reduce the likelihood of the trash bag being torn or punctured by contact with the liner insert 100. Several embodiments of the liner insert 100 thus can reduce the chance of damage to the trash bag even in embodiments of the trash can assembly 20 that do not utilize a generally rigid liner that extends along some or all of the height of the body component 22.

[0049] In certain implementations, the liner insert 100 forms a seal (e.g., generally liquid resistant) with a lower portion of the body component 22. In some embodiments, the liner insert 100 can include openings 42 that are configured to correspond to, or mate with, the projections 40 located on the interior bottom surface of the base portion 44, thereby placing the openings 42 and the projections 40 in fluid communication. By aligning the openings 42 of the liner insert 100 and the projections 40 of the base portion 44, the openings 42 can allow ambient air to pass into and out of the interior of the trash can assembly, which can inhibit or prevent the occurrence a negative pressure region (e.g., in comparison to

ambient) inside the trash can assembly 20 when a user removes a trash bag from the trash can assembly 20. Further, in certain variants, when a user inserts refuse or other materials into the trash bag in the trash can assembly 20, air within the trash can assembly 20 can exit via the openings 42 and the projections 40, thereby inhibiting the occurrence of a positive pressure region (e.g., in comparison to ambient) inside the trash can assembly 20 and allowing the trash bag to freely expand.

[0050] As described above, the trash can assembly 20 can include the rear wall 28. Along the rear wall 28, the trash can 20 can include a back cover 54. The back cover 54 can enclose and/or protect a back side enclosure 56, as illustrated in Figure 5. In some embodiments, the back side enclosure 56 can house the power source 66 for the trash can 20. For example, in some embodiments, the back side enclosure 56 can be configured to receive and retain at least one battery. The back side enclosure 56 can have a generally low profile configuration. For example, the back side enclosure 56 can extend rearwardly from the rear wall 28 a distance of less than or equal to about 1 inch, or less than or equal to about 1/5th of the distance between the outside surfaces of the rear wall 28 and the front-most portion of the front wall 30.

[0051] With reference to Figure 6, in some embodiments, a housing 64 for a power operated driving mechanism 58 can be positioned on or near the rear wall 28, such as above or on top of the back side enclosure 56. In the illustrated embodiment, the housing 64 is a generally cylindrical structure or shell. In other embodiments, the housing 64 can be of other various designs and shapes. In some embodiments, the shape and location of the housing 64, the compactness of the driving mechanism 58 within the housing 64, and/or the generally low-profile of the back side enclosure 56 can allow the trash can assembly 20 to be positioned flush or substantially flush with a wall (not shown) or other generally flat vertical structure of a building or home. Thus, the trash can assembly 20 can have a smaller footprint and/or take up less floor space. In some embodiments, the back side enclosure 56 and/or the driving mechanism housing 64 extend rearwardly from the rear wall 28 less than or equal to about 1.5 inches.

[0052] Certain embodiments of the trash can assembly 20 include a trim member 38. As illustrated in Figure 4, in some embodiments, the trim member 38 is

connected with the back side enclosure 56 and/or body components, such as by fasteners 29 (e.g., screws). Some embodiments of the trim member 38 are configured to rotate with respect to the body component 22 and/or the lid 24. The trim member 38 can be made of various materials, such as plastic or metal. The trim member 38 and the body component 22 can be made from the same or different materials. For example, the trim member 38 and the body component 22 can comprise a plastic material. Some embodiments of the trim member 38 can engage and/or overlap the upper edge 26 of the trash can assembly 20.

[0053] As illustrated in Figure 7, which shows a bottom portion of the trim member 38, certain embodiments of the trim member 38 are configured to support and/or mask electrical components, such as a sensor assembly 102 and/or wire 112 that connects the sensor assembly 102 to the power source 66 or a controller. One or several guide members 114 can be positioned underneath a top surface of the trim member 38 to generally inhibit movement of the wire 112 within the trim member 38, thereby generally hiding the wire from view and reducing the chance of rubbing or other damage to the wire 112.

[0054] With reference to Figures 7-8, in some embodiments, the trim member 38 is configured to secure or retain an upper portion of the trash bag between the trim member 38 and the upper edge 26 of the body component 22. The trim member 38 can include a wall 116 that extends generally downwardly (e.g., in a generally transverse direction to the top surface of the trim member 38). In certain configurations of the trim member 38, the wall 116 extends downwardly beyond the upper edge 26 and along the body component 22. In some embodiments, bag retention features, such as radially inwardly extending flaps 118, are positioned on the inside of the wall 116. The flaps 118 can include an edge engagement element, such as a recess 119. In some embodiments, the recess 119 is positioned at one end of the flap 118 and/or near the top surface of the trim member 38. The flaps 118 can be configured to receive, nest with, and/or or removably lock onto the upper edge 26, such as by a friction fit. In some embodiments, when a trash bag is placed in the body component 22 and the upper portion of the trash bag is positioned over the rolled edge or annular lip of the upper edge 26, the trim member 38 can be positioned (e.g., rotated into position) such that the trash bag is disposed between the trim member 38 and the body component 22. Further, the flaps 118 can be configured to receive the rolled edge or annular

lip of the upper edge 26, thereby generally securing a portion of the trash bag between the flaps 118 and the upper edge 26 and inhibiting the trash bag from falling into the body component 22.

[0055] In some embodiments as illustrated in Figures 9-10, the trim member 38 can be positioned and/or maintained in an open position (e.g., against the force of gravity and/or without requiring a person to hold or otherwise keep the trim member 38 in the open position). The open position can, for example, allow a user to mount a trash bag in the trash can assembly 20 and/or do extended chores, such as cleaning the inside of the trash can assembly 20. As illustrated, in some embodiments, the trim member 38 rotates with respect to the body component to reach the open position. In some embodiments, the trim member 38 includes a retaining mechanism. For example, as shown in Figure 9, the trim member 38 can include a first cam structure 120, such as a tooth, which can be located at the rear of the trim member 38 and on an adjacent side of the housing 64. The first cam structure 120 can be configured to engage a second cam structure, such as a ramp 122. In some embodiments, the second cam structure includes a recess 124 that is configured to receive some or all of the first cam structure 120. The recess 124 can be located at or near an end of the ramp 122 and may be positioned near the rear of the trash can assembly 20. In some embodiments, as the trim member 38 rotates (e.g., toward the open position), the first cam structures 120 rotate (e.g., clockwise) into abutment with the ramp 122. The first cam structure 120 can engage (e.g., slide and/or ride up) the ramp 122 and into the recess 124, which can retain the first cam structure. Thus, the trim member 38 can remain in the open position while the user switches bags or completes one or more chores. When such tasks are complete, the trim member 38 can be rotated in the generally opposite direction (e.g., counter-clockwise) to a closed position, in which the flaps 118 can be engaged with the upper edge 26 of the body component, as discussed above.

[0056] The lid 24 and trim member 38 can be pivotally attached to the trash can assembly 20 by any manner. In the illustrated embodiments, the lid 24 and trim member 38 are pivotally coupled to the trash can assembly 20 generally along the same pivot axis. The pivotal connection can be any type of connection allowing for pivotal movement, such as, hinge elements, pins, or rods. For example, with reference to Figures 6 and 9, first pivot

features, such as pins 50, 52, extend laterally through the housing 64 of the driving mechanism 28 that opens and closes the lid 24, and can be adapted to be received in corresponding second pivot features, such as through-holes 36, provided at the rear of the trim member 38. The pins 50, 52 can extend through the through-holes 36 to pivotably connect the trim member 38 to the housing 64 of the trash can assembly 20 along a pivot axis. With reference to Figure 2, in some embodiments, a portion of or the entire lid 24 can be positioned, located, or received in a recess 68 in the interior of the trim member 38. In some embodiments, a damper 110 (e.g., foam, springs, rubber pads, or any other generally pliable, resilient, and/or damping structure) can be positioned between the lid 24 and trim member 38, such as to provide noise reduction when the lid 24 closes onto the trim 38.

[0057] In some embodiments, a rear portion of lid 24 can be pivotably coupled to the trash can assembly 20 along the same pivot axis as the trim member 38. For example, the rear portion of lid 24 can be pivotably coupled to the trash can assembly 20 along the same pivot axis as the trim member 38 via the pins 50, 52, which can also connect the trim member 38 to the driving mechanism housing 64 of the trash can assembly 20.

[0058] In some embodiments, the pins 50, 52 can extend through the trim member 38 and the housing 64 and are adapted to be received in corresponding through-holes 72 of additional structures secured to the inside of the rear of the lid 24 located adjacent to the driving mechanism components 74. In some embodiments, the pins 50, 52 can pivotably couple the lid 24 and trim member 38 to the trash can assembly 20 along the same pivot axis. In some embodiments, as illustrated in Figure 5, bias members 126, such as one or more torsion springs, can be positioned on the pins 50, 52. The biasing members 126 can provide a biasing force to assist in opening and/or closing the lid 24, which can reduce the amount of power consumed by the motor 78 when moving the lid 24 between the open and closed positions and/or can allow for the use a smaller motor (e.g., in dimensional size and/or in power output).

[0059] With reference to Figure 11, the lid can include lid driving mechanism components 74. In certain variants, the lid driving mechanism components 74 are configured to abut, mate, contact, receive and/or be received in the drive mechanism 58 in the housing 64 to facilitate opening and closing the lid 24. In some variants, the lid driving

mechanism components 74 include a generally C-shaped portion. In certain implementations, the lid driving mechanism components 74 can include rotation support members, such as flanges 88, 90, and lid position sensing elements, such as flagging members 92, 94. As illustrated, the flanges 88, 90 and/or the flagging members 92, 94 can extend radially inwardly and can be attached at or near the rear underside of the lid 24. As described in further detail below, the controller 70 can communicate with a sensing system to determine various functions and parameters of the trash can assembly, such as when to drive the motor 78 so as to open or close the lid 24. As illustrated, in some embodiments, a portion of or the entire lid driving mechanism components 74 can be secured to the inside of the rear of the lid 24.

[0060] With reference to Figures 5-6 and 11-12, the driving mechanism 58 can include a controller or circuit board 70. In some embodiments, the driving mechanism components in the housing 64 can include a drive motor 78 and shaft or axle 80. Some embodiments include a bias member, such as a spring 82. Certain embodiments include a clutch mechanism 84 and/or a torque transmission member, such as an end member 86. At least some of the driving mechanism components can be removable from the other components. For example, the drive motor 78, or other component, can be removable such so as to facilitate repair, replacement, etc.

[0061] With reference to Figure 9, the driving mechanism 58 can include a first position sensor 96 (e.g., a closed position sensor) and a second position sensor 98 (e.g., an open position sensor). The position sensors 96, 98 can comprise paired optical proximity detectors, such as light emitters, that cooperate with an intermediate sensor 128, such as a light receiver. However, other types of sensors can also be used. As illustrated, the position sensors 96, 98 can be located together in one housing, which can facilitate manufacturability and repair and can reduce the overall space occupied by the position sensors 96, 98. As described in more detail below, in some embodiments, the position sensors 96, 98 can be configured to facilitate detection of the position of the lid 24 as it moves between the open and closed positions. The motor 78 and the position sensors 96, 98 can be configured to communicate with the controller 70 so as to facilitate control of the movement of the lid 24.

[0062] In some embodiments, the lid 24 includes the flagging members 92, 94, which can be oriented or otherwise configured as to indicate, in cooperation with the position sensors 96, 98, a position of the lid 24. As shown in Figure 9, when the lid 24 is in its home or fully closed position, the flagging member 92 is located between the position sensor 96 and the intermediate sensor 128 and the flagging member 94 is not located between the position sensor 98 and the intermediate sensor 128. In some configurations, the flagging member 92 being between the position sensor 96 and the receiver 128 blocks an emission (e.g., a signal) between the position sensor 96 to intermediate sensor 128. In some embodiments, such emission blocking can be interpreted (e.g., by the controller implementing an algorithm) to discern a position of the lid 24. For example, the controller 70 can be configured to determine that the lid 24 is in its home or closed position when flagging member 92 is located in position sensor 96 to block emissions to the intermediate sensor 128.

[0063] In some embodiments, as the lid 24 rotates into the fully open position, the flagging member 92 rotates such that it is no longer between the position sensor 96 and the intermediate sensor 128. However, in certain embodiments, as the lid 24 rotates into the fully open position, the flagging member 94 rotates such that it is between the position sensor 98 and the intermediate sensor 128, thereby blocking emissions (e.g., a signal) between the sensor 98 to intermediate sensor 128.

[0064] In some embodiments, when the flagging member 94 is located between the position sensor 98 and the intermediate sensor 128, and the flagging member 92 is not located between the position sensor 96 and the intermediate sensor 128, the controller 70 can be configured to determine that the lid 24 is in a fully open position. In certain embodiments, the controller 70 can be configured to determine that the lid 24 is in a fully open position when the opposite orientation occurs. In some embodiments, the intermediate sensor 128 is configured to receive emissions from one or both of the position sensors 96, 98. In some embodiments, the one or both of the position sensors 96, 98 are configured to receive emissions from the intermediate sensor 128.

[0065] Any combination of flagging members and position sensors can be used to detect various positions of the lid 24. For example, additional positions (e.g., an about half-

way opened position) can be detected with additional sensors and flagging members in a manner similar or different than that described above. Some embodiments have flagging members located in the housing 64 and position sensors on the lid 24.

[0066] With reference to Figure 2, the trash can assembly 20 can also include a sensor assembly 102 disposed on a generally outer portion of the trash can assembly 20. In the illustrated embodiment, the sensor assembly 102 is disposed near the front of the trim member 38, in an upper generally central portion. In some embodiments, the sensor assembly 102 can include an outer covering 104 which can include a transparent or translucent structure that permits transmission and/or receipt of light signals. For example, the outer covering 104 can be made of glass or plastics, such as Polycarbonate, Makrolon®, etc. In some embodiments, the outer covering 104 can be substantially flush with a top surface of the trim member 38. In some embodiments, the sensor assembly 102 can sense a user's movements to direct the lid 24 to open or close. For example, the sensor assembly 102 can sense a reflected or emitted signal or characteristic (e.g., light, thermal, conductivity, magnetism, or otherwise) from a user (e.g., a body part). In some embodiments, the sensor assembly 102 is configured as is described in U.S. Patent Application Publication No. 2011/0220647, filed March 4, 2011, the entirety of which is hereby incorporated by reference.

[0067] In some embodiments, the lid 24 can be configured to permit manual operation of the lid 24 generally without damage (e.g., stripping or wearing down) to components of the trash can assembly 20, such as the motor 78, shaft 80, or otherwise. As previously noted, and as illustrated in Figure 11, the lid 24 can include flanges 88, 90, which can be positioned on the rear underside of the lid 24. As illustrated, generally open circumferential spaces exists between the flanges 88, 90.

[0068] The flanges 88, 90 can be configured to engage a clutch mechanism 84, which can enable the lid 24 to rotate without, or without substantial, rotation of the motor 78, shaft 80, or certain other components of the trash can assembly 20, as discussed in more detail below. As illustrated in Figure 12, the clutch mechanism 84 includes one or more torque transmission members, such as arms 106, 108, that can extend radially outward from a body of the clutch mechanism 84. In some embodiments, the arms 106, 108 are spaced apart

from each other, such as by about 180 degrees. Various other angles are contemplated, such as at least: about 30°, about 45°, about 60°, about 90°, about 120°, values in between, or otherwise.

[0069] The arms can be positioned in the circumferential spaces between the flanges 88, 90. For example, the arms 106, 108 can abut or contact a surface the flanges 88, 90, as illustrated in Figure 13. In certain such configurations, when the arm 106 is abutted with flange 90 and the arm 108 is abutted with flange 90, a circumferential distance D1 exists between a non-abutted surface 108a of the arm 108 and a non-abutted surface 88a of the flange 88. In some embodiments, a generally equal circumferential distance D2 (not shown) exists between a non-abutted surface 106a of the arm 106 and a non-abutted surface 90a (not shown) of the flange 90. In certain configurations, the circumferential distance D1 and/or D2 is greater than or equal to the amount of rotation of the lid from the open to the closed position. For example, the circumferential distance D1 and/or D2 can be at least about 60° and/or less than or equal to about 125°. In certain variants, the circumferential distance D1 and/or D2 is greater than or equal to about 80°. As discussed below, such a configuration can allow the lid 24 to be manually moved between the open and closed positions.

[0070] In some embodiments, the clutch mechanism 84 is positioned on the motor shaft 80 between a biasing member, such as a spring 82, and an end member 86. In some embodiments, the end member 86 is fixed to the motor shaft 80, thus torque from the motor 78 can be transmitted through the shaft 80 and into the end member 86. In some embodiments, the bias on the clutch mechanism 84 against the end member 86 can result in a frictional interface between the clutch 84 and end member 86. The frictional interface between the clutch 84 and end member 86 can result in the clutch 84 rotating when the shaft 80 rotates. For example, torque from the motor 78 can be transmitted through the shaft 80, through the end member 86, and into the clutch mechanism 84. In some variants, certain components (e.g., the spring 82, clutch mechanism 84, and end member 86) are positioned in general coaxial alignment along a portion of the longitudinal length of the shaft 80.

[0071] During operation of some embodiments, the motor 78 can turn the shaft 80, which can turn the end member 86, which can turn the clutch mechanism 84 (e.g.,

by the frictional interface between the end member 86 and clutch mechanism 84). Rotation of the clutch mechanism 84 can result in rotation of the arms 106, 108. Because, in some embodiments, the arms 106, 108 generally abut or contact the flanges 88, 90 of the lid 24, rotation of the arms 106, 108 can result in rotation of the flanges 88, 90, and thus the lid 24 (e.g., from the closed to the open position).

[0072] As illustrated in Figure 13, due to the circumferential distances D1, D2 between the non-abutted surfaces 88a, 90a of the flanges 88, 90 and the non-abutted surfaces 106a, 108a of the arms 106, 108, the lid 24 can be manually opened without turning the motor 78. As an example, manual operation of the lid as illustrated in Figure 13 will now be discussed. As illustrated in Figure 13, the lid 24 is in the home or closed position. If a user, were to manually operate the lid 24 toward the open position (e.g., rotate the lid clockwise in the illustrated embodiment), the flange 88 would rotate generally clockwise in an arc path and the flange 90 would rotate about an equivalent distance in generally the same direction (e.g., clockwise). No force would be applied to the arms 106, 108 of the clutch mechanism 84, which, as discussed above, is connected with motor shaft 80 via the end member 86. Similarly, a user could then close the lid 24 and the flanges 88, 90 would rotate in generally the opposite direction (e.g., counter-clockwise) as when the lid was opened, back to their original positions when the lid 24 was in the home position, without applying any force to the arms 106, 108 of the clutch mechanism 84. Thus, in certain embodiments, no force is required to be applied to the arms 106, 108 to turn the clutch mechanism 84 and motor shaft 80.

[0073] As noted above, in some embodiments, the power operated driving mechanism 58 can be used to open or close the lid 24. For instance, the motor 78 can rotate the shaft 80, which can rotate the end member 86, which can transmit the torque to the clutch mechanism 84, which can rotate the flanges 88, 90 and the lid 24. In some embodiments, a coupling device can be positioned between the motor 78 and the shaft 80 to reduce vibrations from being transferred from the motor 78 to other mechanism being driven, such as the lid 24. In certain instances, after or during operation of the driving mechanism 58 (e.g., after or as the lid 24 is being moved between the open and closed positions), a user may accidentally or intentionally try to manually close or open the lid 24. In certain such

situations, the flanges 88, 90 generally remain in contact with the arms 106, 108 rather than rotating relative to the arms 106, 108 as discussed above. In some embodiments, this is because the rotational force produced by the motor 78 (via the shaft 80, end member 86, and/or clutch mechanism 84) encourages rotation of the arms 106, 108 against the flanges 88, 90 (e.g., the arms 106, 108 apply a pushing force to the surfaces of the flanges 88, 90 to rotate the lid 24). Thus, in some embodiments, a user who manually closes the lid 24 when the motor has opened, or is in the process of opening the lid 24, acts against the operation of the motor 78.

[0074] For example, when the motor 78 of Figure 13 is opening the lid 24, the motor 78 encourages the arms 106, 108 to abut against and turn the flanges 88, 90 to turn in a clockwise direction (viewed from the perspective of Figure 13). Yet when a user manually attempts to close the lid 24, the lid and the flanges 88, 90 are encouraged in a counter-clockwise direction (viewed from the perspective of Figure 13). Thus, in certain configurations, the arms 106, 108 are being encouraged to rotate in opposite directions concurrently. Such a scenario can result in damage to the arms 106, 108 of the clutch mechanism 84, the shaft 80, the motor 78, or otherwise. In some embodiments, to generally avoid such damage, the clutch mechanism 84 or other structure can be configured to rotate with respect to the end member 86 or other components.

[0075] In some embodiments, the clutch mechanism 84 includes a first cam surface 180 and a first return surface 182. As shown in Figure 12, the first cam surface 180 can be inclined from a first level to a second level, in relation to a plane extending generally transverse to the longitudinal axis of the clutch mechanism 84. The first return surface 182 can intersect the first cam surface 180 and can be disposed between the first and second levels.

[0076] In some embodiments, the end member 86 includes a second cam surface 184 and a second return surface 186. The second cam surface 184 can be inclined from a first level to a second level, in relation to a plane extending generally transverse to the longitudinal axis of the end member 86 and the shaft 80. The second return surface 186 can intersect the first cam surface 180 and can be disposed between the first and second levels.

[0077] The second cam surface 184 and the second return surface 186 of the end member 86 can be shaped to correspond with the first cam surface 180 and the first return surface 182 of the clutch mechanism 84, thereby allowing mating engagement of the end member 86 and the clutch mechanism 184. For example, summits 180a of the first cam surface 180 can be nested in the valleys 184b of the second cam surface 184, and summits 184a of the second cam surface 184 can be nested in the valleys 180b of the first cam surface 180.

[0078] As previously discussed, in some embodiments, torque from the motor 112 can be transmitted through the shaft 80 to the end member 86. In some embodiments, the end member 86 is generally rigidly connected with the shaft 80, such as by a fastener (e.g., a screw). Thus, in certain variants, the end member 86 is inhibited or prevented from rotating relative to the shaft 80. In certain implementations, the end member 86 is configured to transmit torque from the motor 112 to the clutch mechanism 84, such as by friction between the first and second cam surfaces 180, 184 and/or between the first and second return surfaces 182, 186.

[0079] In some embodiments, the clutch mechanism 84 can translate along a portion of the longitudinal length of the shaft 80. As shown, the biasing member 82 can bias the clutch mechanism 84 into engagement with the end member 86. In some embodiments, translation of the clutch mechanism 84 (e.g., in a direction generally toward the motor 112) along a portion of the drive shaft 80 is generally against the bias of the biasing member 82.

[0080] In some embodiments, when the lid 24 is manually operated, the clutch mechanism 84 and the end member 86 rotate relative to each other. For example, in some embodiments, when the lid 24 is manually operated the first and second inclined cam surfaces 180, 184 move relative to each other. In certain configurations, the inclined cam surfaces 180, 184 slide relative to each other, which results in the inclined cam surfaces climbing each other. For example, as the inclined cam surfaces 180, 184 slide relative to each other, the summits 180a, 184a of the inclined cam surfaces 180, 184 circumferentially approach each other.

[0081] In certain embodiments, the relative movement between the first and second inclined cam surfaces 180, 184 (e.g., by the interaction of the inclines) urges the

clutch mechanism 84 and the end member 86 apart. For example, the clutch mechanism 84 and the end member 86 can be urged in generally opposite directions along the longitudinal axis of the shaft 80. In some embodiments, the end member 86 is generally restrained from moving longitudinally (e.g., by the fastener). However, certain embodiments of the clutch mechanism 84 are able to move away from end member 86 by translating along the shaft 80 (e.g., against the bias of the biasing member 82). Thus, in certain implementations, relative rotation of the inclined cam surfaces 180, 184 results in the clutch mechanism 84 translating along a portion of the longitudinal length of the shaft 80 (e.g., in a direction generally toward from the motor 78), against the bias of the biasing member 82. Certain embodiments can facilitate relative rotation of the clutch mechanism 84 and the end member 86 without imposing undue stress on, or damage to, the clutch mechanism 84, end member 86, shaft 80, and/or motor 78. Accordingly, manual operation of the lid 24 can be performed without imposing undue stress on, or damage to, components of the trash can assembly 20.

[0082] In some implementations, when manual operation of the lid 24 ceases, the bias of the biasing member 82 can return the clutch mechanism 84 into generally full engagement with the end member 86. For example, after manual operation of the lid 24 ceases, the bias of the biasing member 82 can facilitate re-engagement of the inclined cam surfaces 180, 184. In some embodiments, re-engaging the clutch mechanism 84 and the end member 86 allows the transmission of torque from the motor 78 to the clutch mechanism 84, which can provide powered operation of the lid. Thus, some embodiments provide automatic and/or passive engagement and/or disengagement of the motor 78 and/or drive shaft 80 from the clutch mechanism 84 and/or the lid 24.

[0083] Although the trash cans have been disclosed in the context of certain embodiments and examples, it will be understood by those skilled in the art that the present disclosure extends beyond the specifically disclosed embodiments to other alternative embodiments and/or uses of the trash cans and obvious modifications and equivalents thereof. In addition, while several variations of the trash cans have been shown and described in detail, other modifications, which are within the scope of the present disclosure, will be readily apparent to those of skill in the art. For example, a gear assembly and/or alternate torque transmission components can be included. For instance, in some

embodiments, the trash can assembly 20 includes a gear assembly. Some embodiment of the gear assembly include a gear reduction (e.g., greater than or equal to about 1:5, 1:10, 1:50, values in between, or any other gear reduction that would provide the desired characteristics), which can modify the rotational speed applied to the shaft 80, clutch mechanism 84, and/or other components.

[0084] It is also contemplated that various combinations or sub-combinations of the specific features and aspects of the embodiments can be made and still fall within the scope of the present disclosure. It should be understood that various features and aspects of the disclosed embodiments can be combined with or substituted for one another in order to form varying modes of the trashcans. Thus, it is intended that the scope of the present disclosure should not be limited by the particular disclosed embodiments described above.

THE FOLLOWING IS CLAIMED:

1. A trash can assembly comprising:
 - a body component configured to receive a portion of a removable liner;
 - a trim member pivotally coupled with the body and configured to move between a closed position and an open position such that, when the trim member is in the closed position and an upper portion of the removable liner is positioned over an upper edge of the body component, the trim member is configured to engage the upper edge of the body component to secure the upper portion of the removable liner between the trim member and the upper edge of the body component; and
 - a lid pivotally coupled with the body and configured to move between a first position and a second position, a periphery of the lid being generally received in the trim when the trim is in the closed position and the lid is in the first position, the periphery of the lid being positioned generally outside of the trim when the trim is in the closed position and the lid is in the second position.
2. The trash can assembly of Claim 1, wherein the trim member further comprises a retaining mechanism configured to maintain the trim member in the open position, thereby allowing a user to mount the removable liner in the trash can assembly.
3. The trash can assembly of Claim 2, wherein the retaining mechanism comprises a first cam structure and a second cam structure, the first cam structure configured to be received in a recess of the second cam structure as the trim member moves toward the open position.
4. The trash can assembly of Claim 1, further comprising a power operated driving mechanism configured to move the lid between the first and second positions.
5. The trash can assembly of Claim 4, wherein the power operated driving mechanism is activated by a sensor.
6. The trash can assembly of Claim 5, wherein at least one of the power operated driving mechanism and the sensor is deactivated when the trim member is in the open position.

7. A trash can assembly comprising:
 - a body component;
 - a lid mounted relative to the body component and configured to move between open and closed positions, the lid having a lid driving mechanism;
 - a power operated driving mechanism comprising a motor coupled with a shaft;
 - and
 - a clutch mechanism engageable with the lid driving mechanism, the clutch mechanism configured to receive torque from the motor via the shaft and to transmit the torque to the lid driving mechanism to move the lid between the open and closed positions;
 - wherein the lid driving mechanism and the clutch member are configured to allow a user to manually move the lid between the open and closed positions substantially without applying torque to at least one of: the motor, the shaft, and the clutch mechanism.
8. The trash can assembly of Claim 7, wherein the lid driving mechanism is attached to a bottom surface of the lid and is configured to abut with the clutch mechanism such that, when the driving mechanism is operated, the clutch mechanism is configured to move the lid between the open and closed positions.
9. The trash can assembly of Claim 8, wherein the lid driving mechanism comprises radially inwardly extending first and second flanges configured to abut with first and second torque transmission members of the clutch mechanism respectively, such that rotation of the clutch mechanism rotates the first and second flanges and the lid moves between the open and closed positions.
10. The trash can assembly of Claim 9, wherein the first and second flanges are positioned on the lid such that circumferential spaces are defined between the first and second flanges, wherein the first and second torque transmission members are configured to be positioned within the circumferential spaces.
11. The trash can assembly of Claim 10, wherein the first and second torque transmission members comprise first and second arms extending radially outward from a central body of the clutch mechanism, wherein a circumferential space is disposed between

the first and second flanges, at least one of the first and second arms being positioned within the circumferential space.

12. The trash can assembly of Claim 11, wherein at least one of the first and second arms having a first surface and second surface, the first surface configured to abut with the first flange and the second surface configured to abut with the second flange.

13. The trash can assembly of Claim 12, wherein, when the first surface is abutted with the first flange, a first circumferential distance is defined between a second surface of the second arm and the second flange, the first circumferential distance being greater than or equal to the amount of rotation of the lid between the closed and open positions.

14. A trash can assembly comprising:

a body component;

a lid mounted relative to the body component and configured to move between open and closed positions;

a driving mechanism operable to move the lid between the open and closed positions, the driving mechanism comprising a motor, a shaft, and an end member, the motor configured to rotate the shaft, the shaft configured to rotate the end member; and

a clutch mechanism rotatably engageable with the lid and adapted to receive torque from the end member so as to move the lid between the open and closed positions, the clutch mechanism being configured to move relative to the end member when the lid is moved between the opened and closed positions generally without operation of the driving mechanism.

15. The trash can assembly of Claim 14, wherein the driving mechanism comprises a biasing member configured to bias the clutch mechanism into engagement with the end member such that torque from the motor is transmitted to the clutch mechanism via the engagement between the end member and the clutch mechanism.

16. The trash can assembly of Claim 15, wherein the end member is rigidly coupled to the shaft such that the end member is generally prevented from rotating relative to the shaft.

17. The trash can assembly of Claim 16, wherein:

when the lid is moved between the opened and closed positions generally without operation of the driving mechanism, the clutch mechanism is configured to translate toward the motor along a portion of a longitudinal length of the shaft and to rotate relative to the end member; and

when such movement of the lid ceases, the bias of the biasing member translates the clutch mechanism towards and into engagement with the end member.

18. The trash can assembly of Claim 16, wherein the clutch mechanism and the end member comprise corresponding cam surfaces configured to allow the clutch mechanism to translate and rotate relative to the end member.

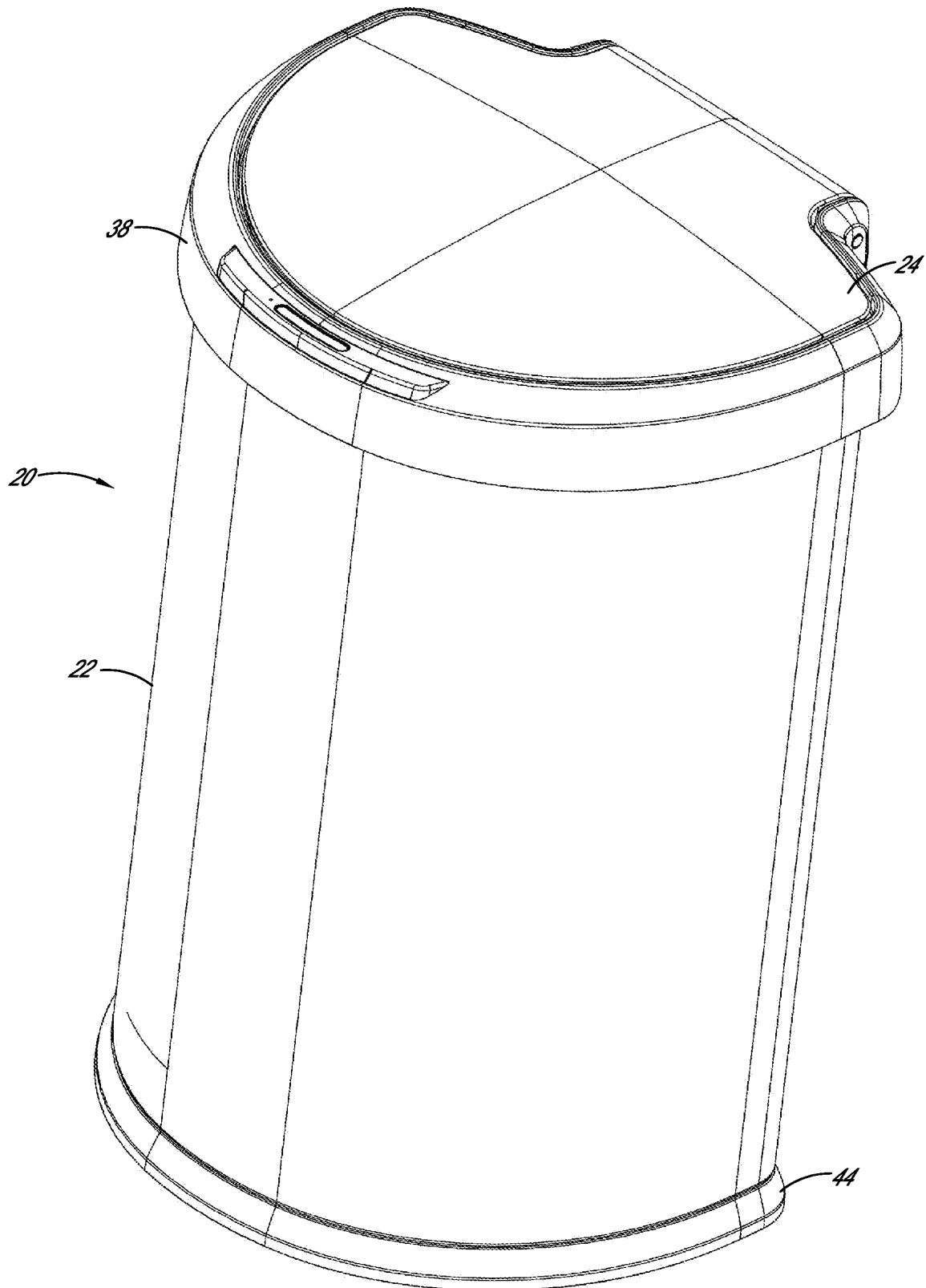
19. The trash can assembly of Claim 18, wherein the clutch mechanism comprises a first inclined cam surface and the end member comprises a second inclined cam surface, the first and second inclined cam surfaces configured to allow mating engagement between the clutch mechanism and the end member.

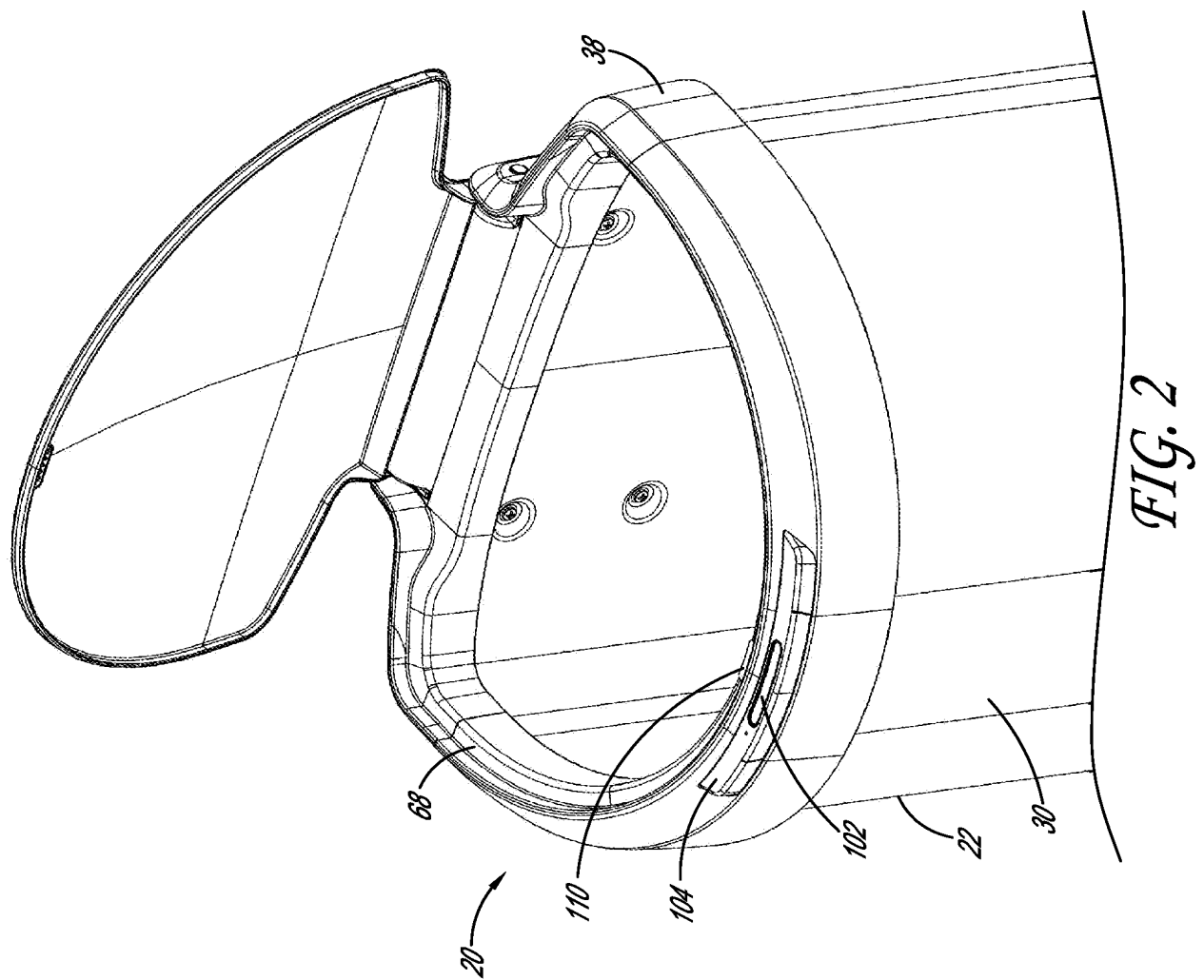
20. The trash can assembly of Claim 19, wherein when the lid is moved between the opened and closed positions generally without operation of the driving mechanism, the first and second inclined cam surfaces slide relative to each other.

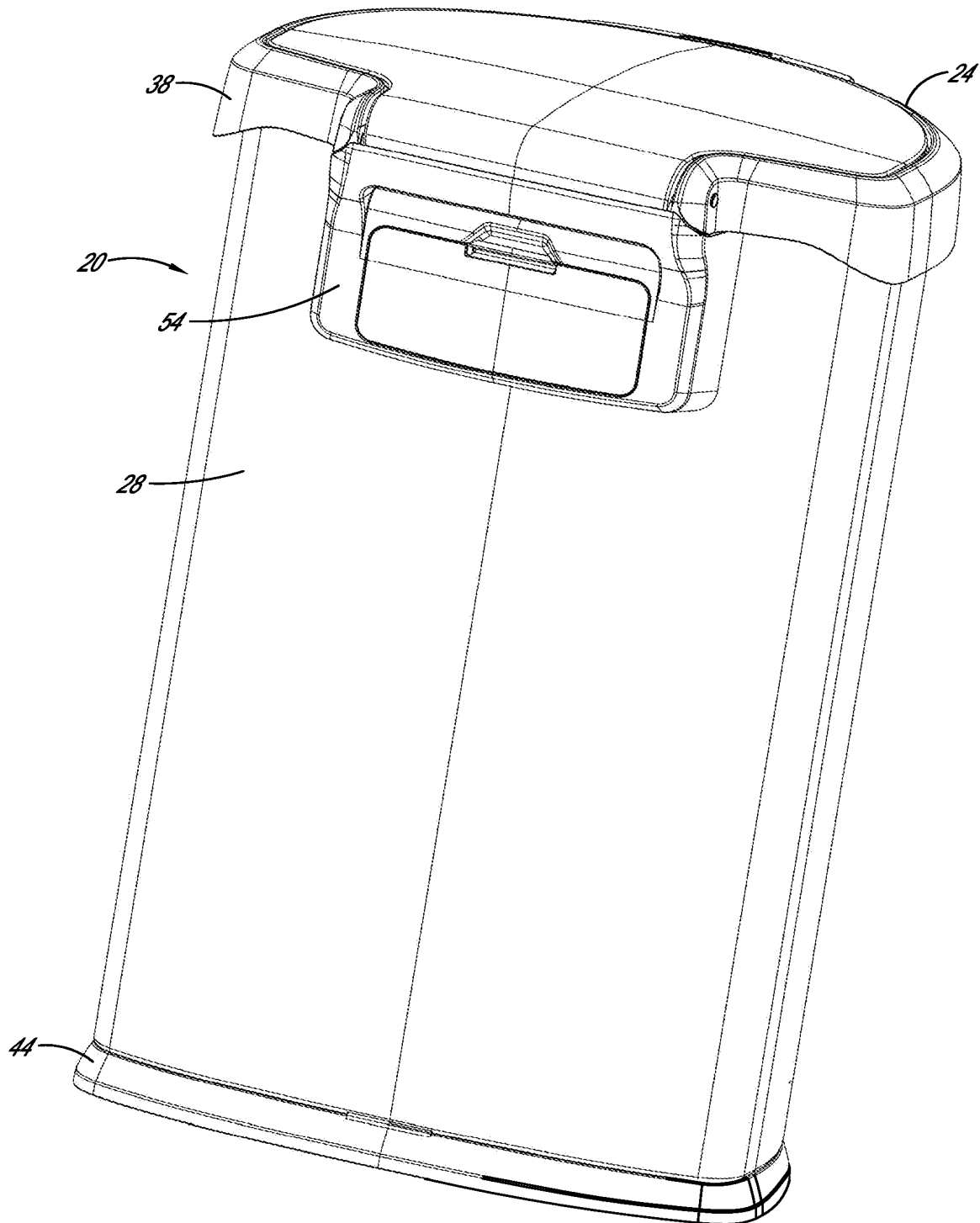
TRASH CAN ASSEMBLY

ABSTRACT OF THE DISCLOSURE

Various embodiments of a trash can assembly (e.g., a receptacle configured to receive refuse, recyclable materials, or otherwise), and related methods, are provided. Some embodiments of the trash can assembly include a body component and a lid configured to move between an open position and a closed position. In some variants, the lid can be moved between the open and closed positions by a power operated driving mechanism, such as a motor and/or other drivetrain components. In certain embodiments, the trash can assembly includes a clutch mechanism to facilitate manual operation of the lid while inhibiting or preventing damage to the motor and/or other drivetrain components.

*FIG. 1*



**FIG. 3**

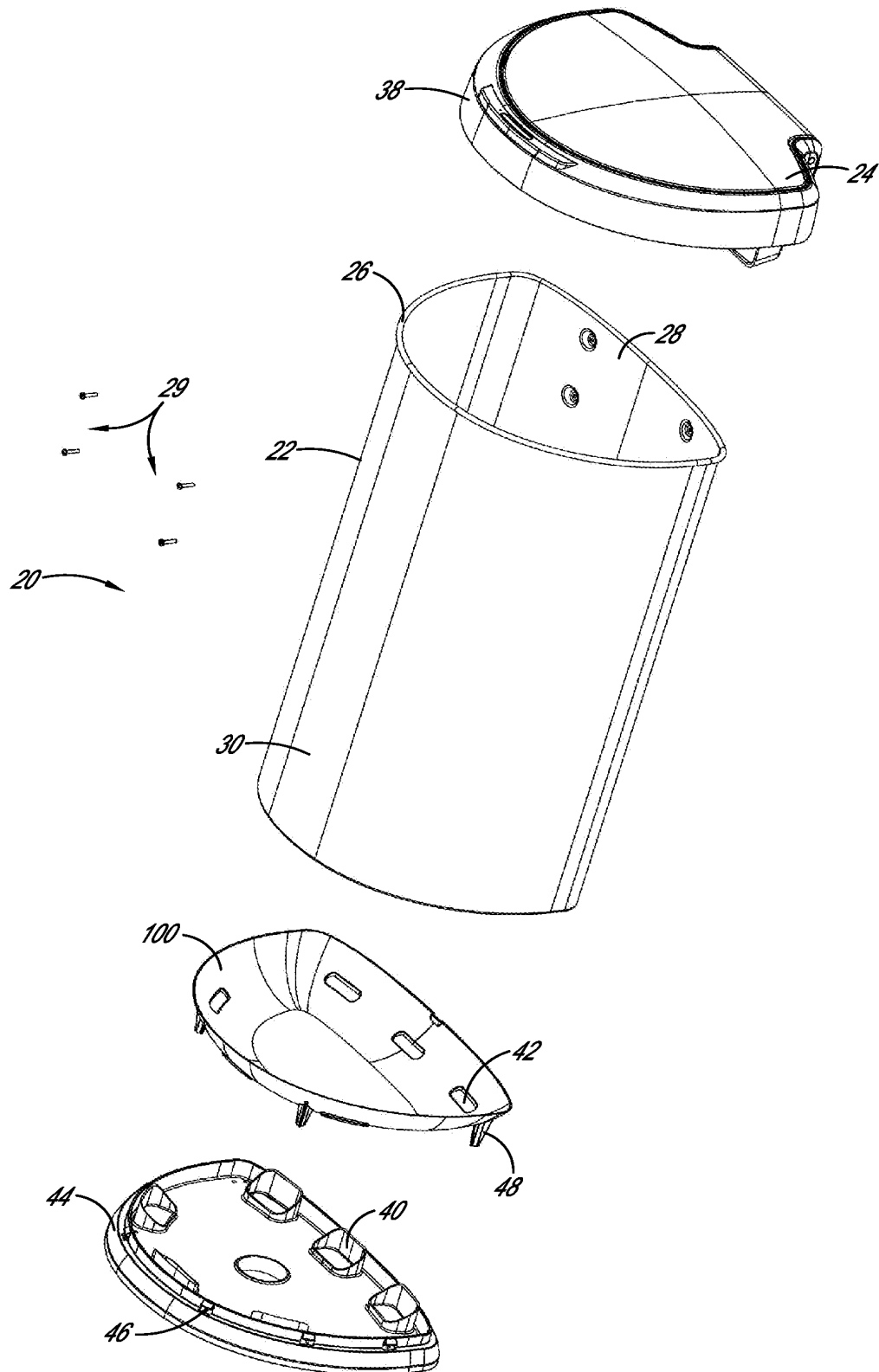
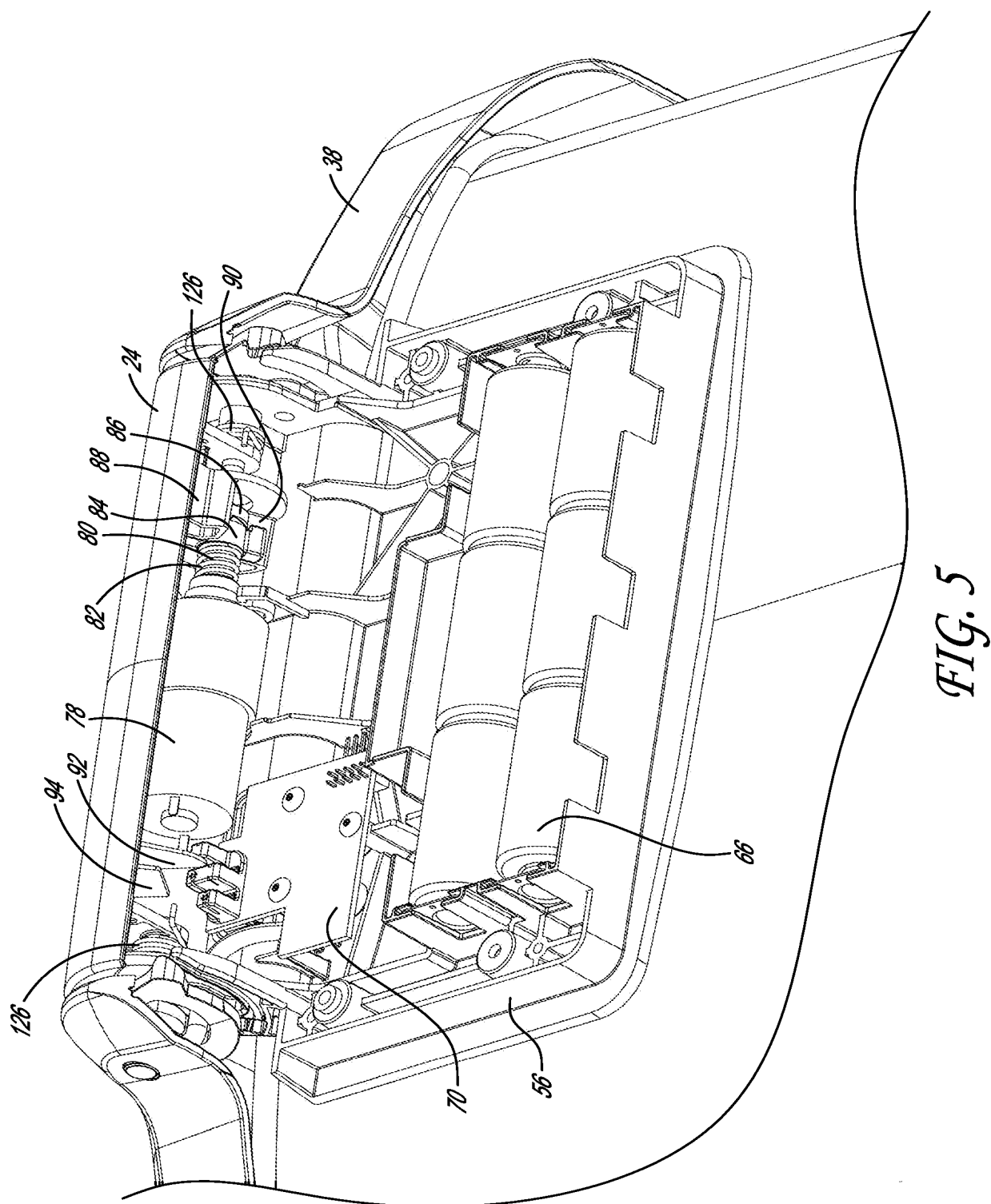
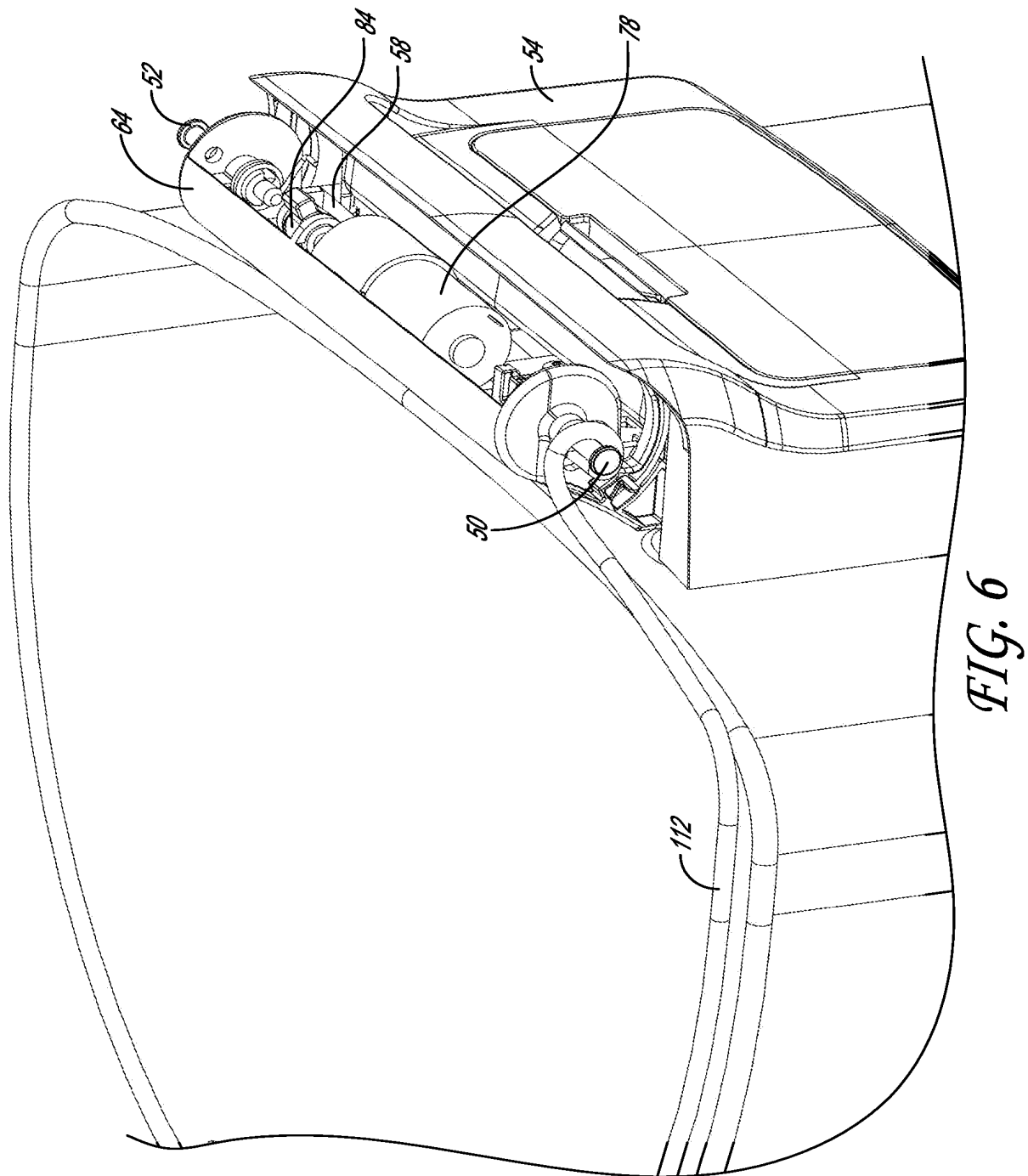
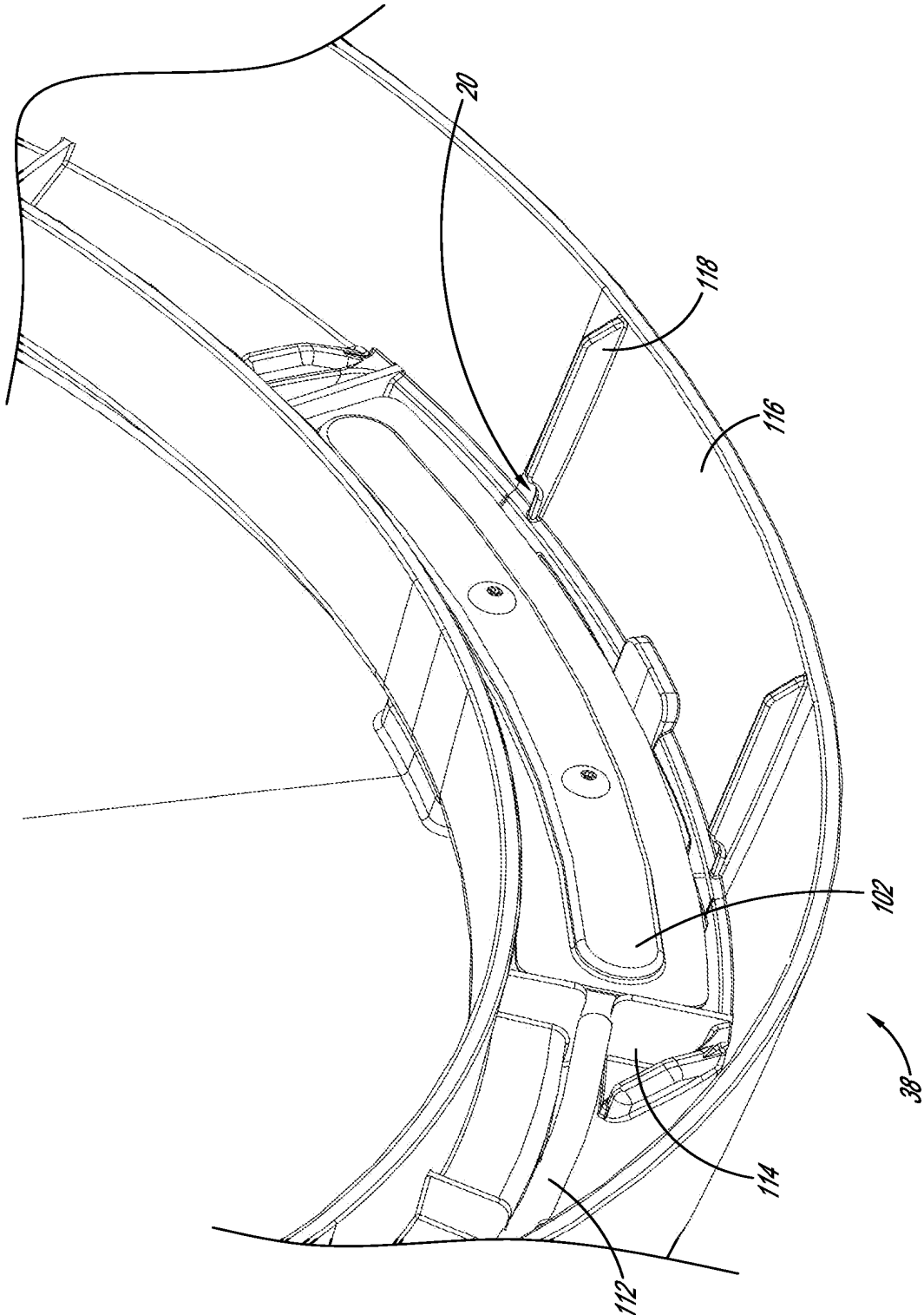


FIG. 4





*FIG. 7*

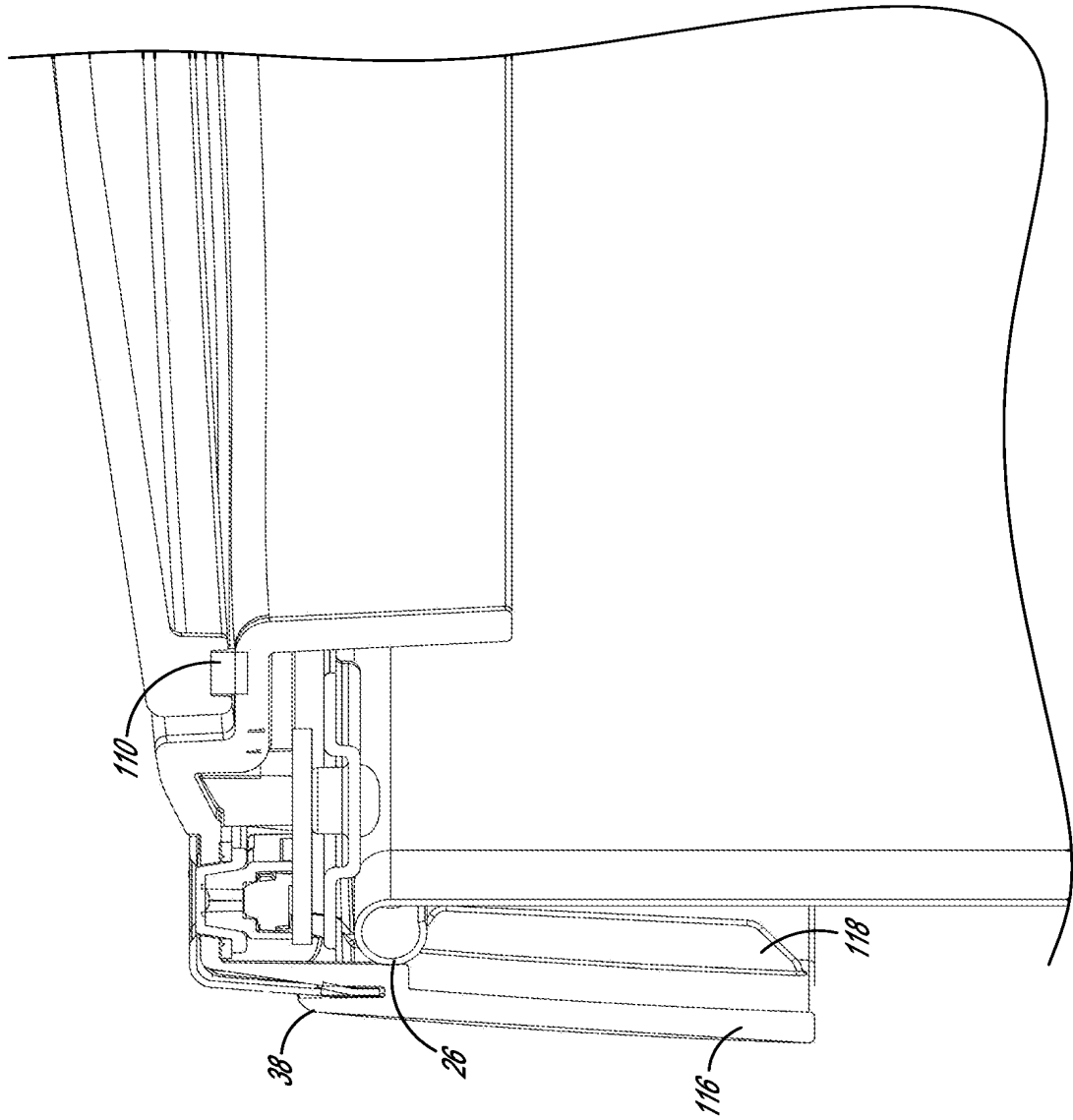


FIG. 8

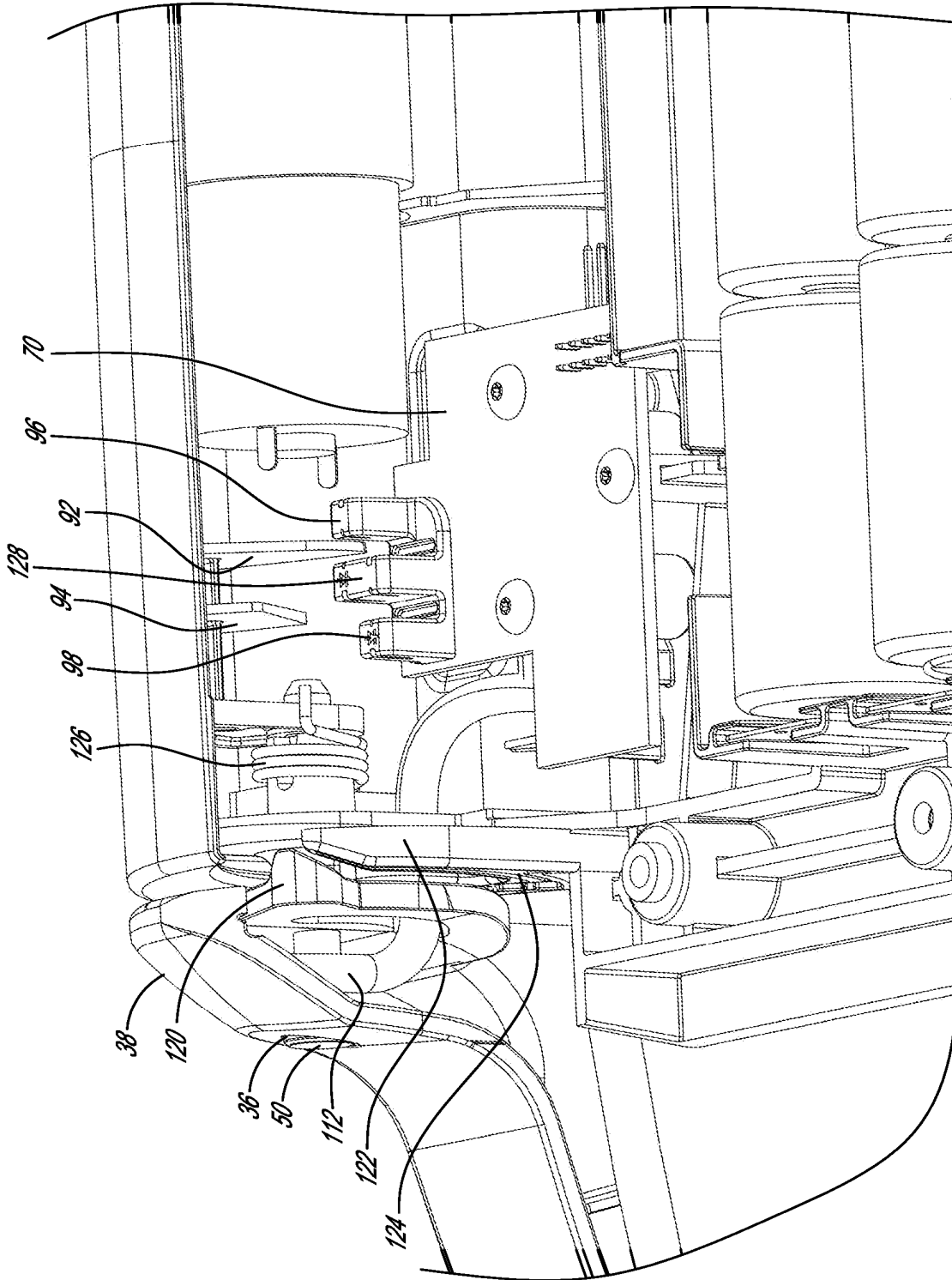


FIG. 9

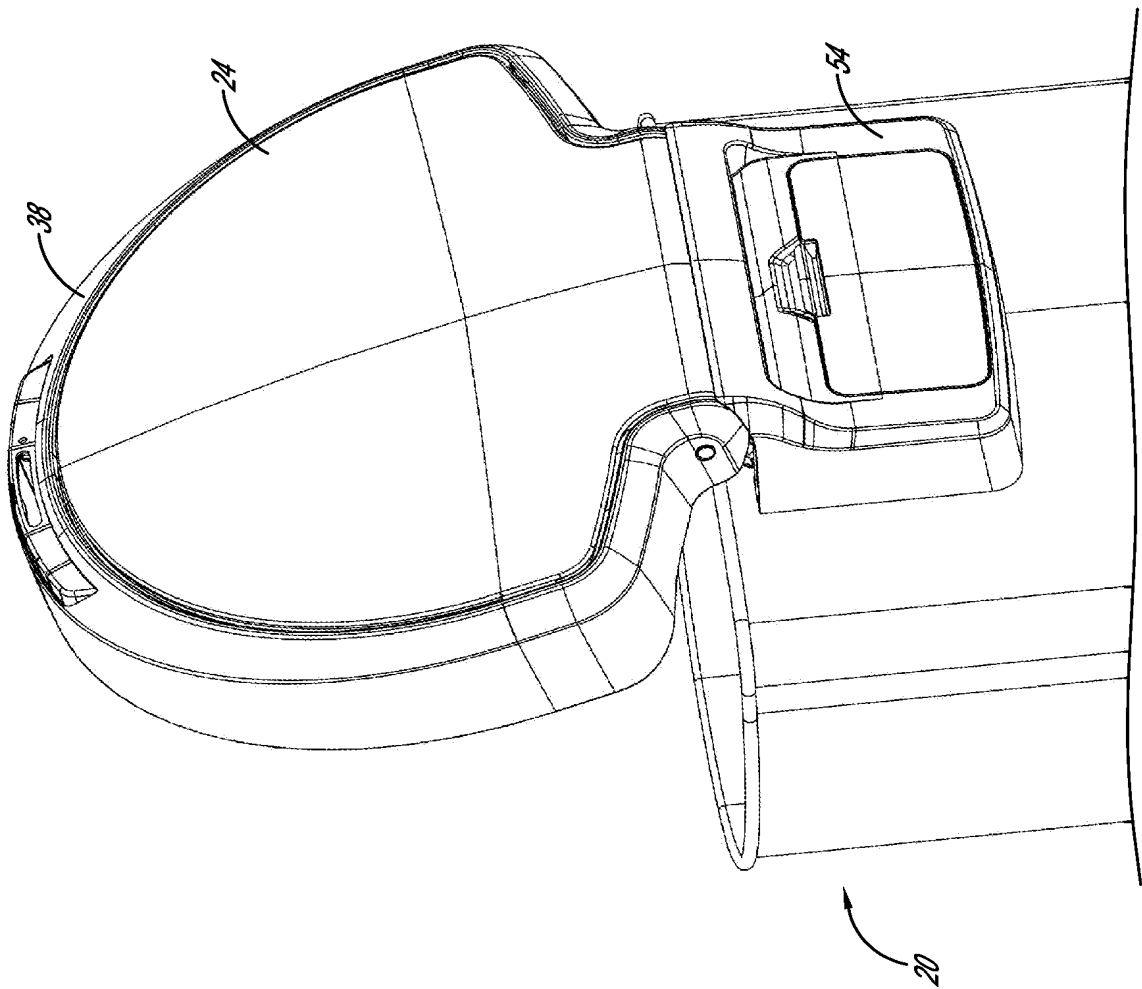


FIG. 10

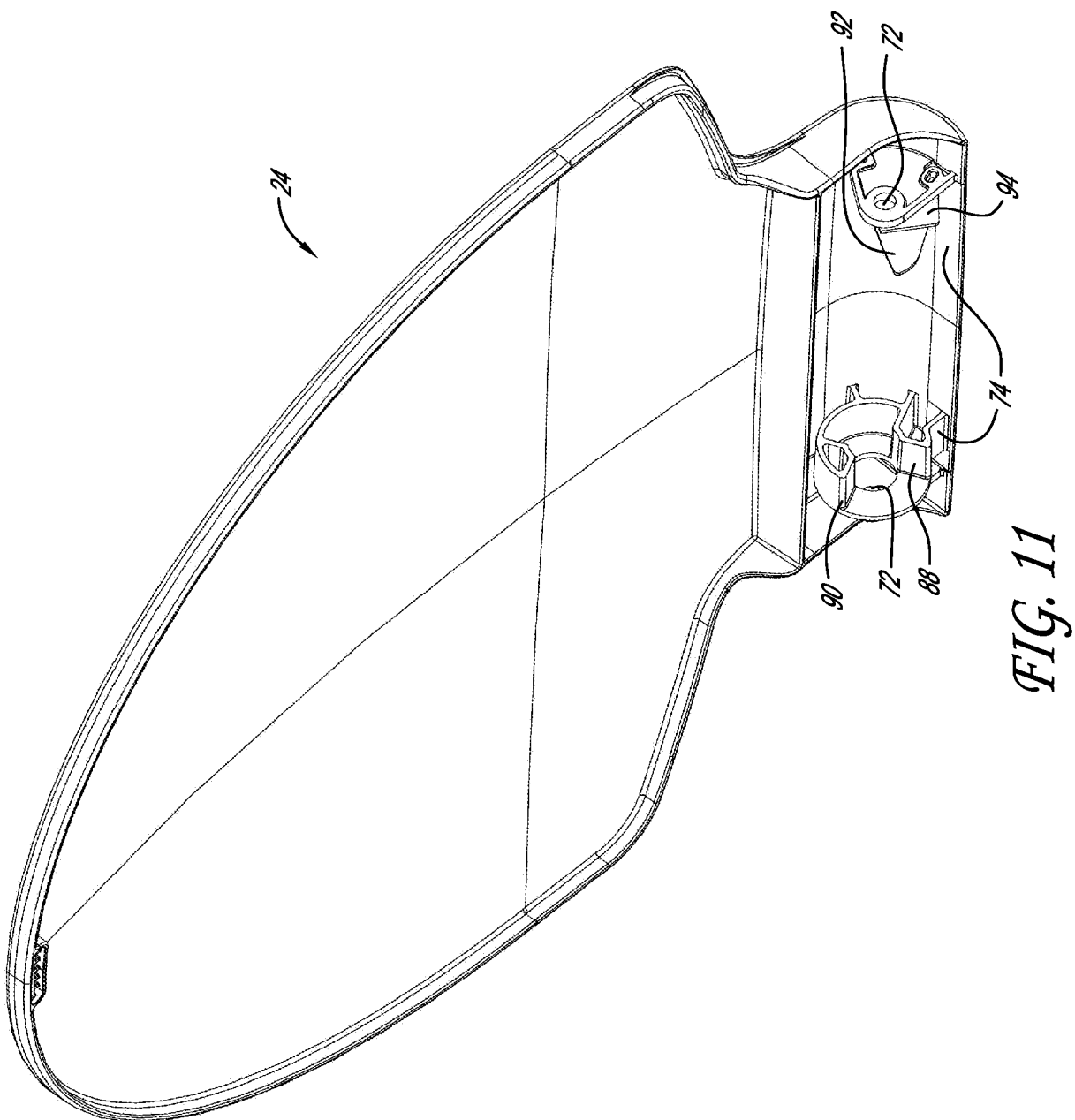


FIG. 11

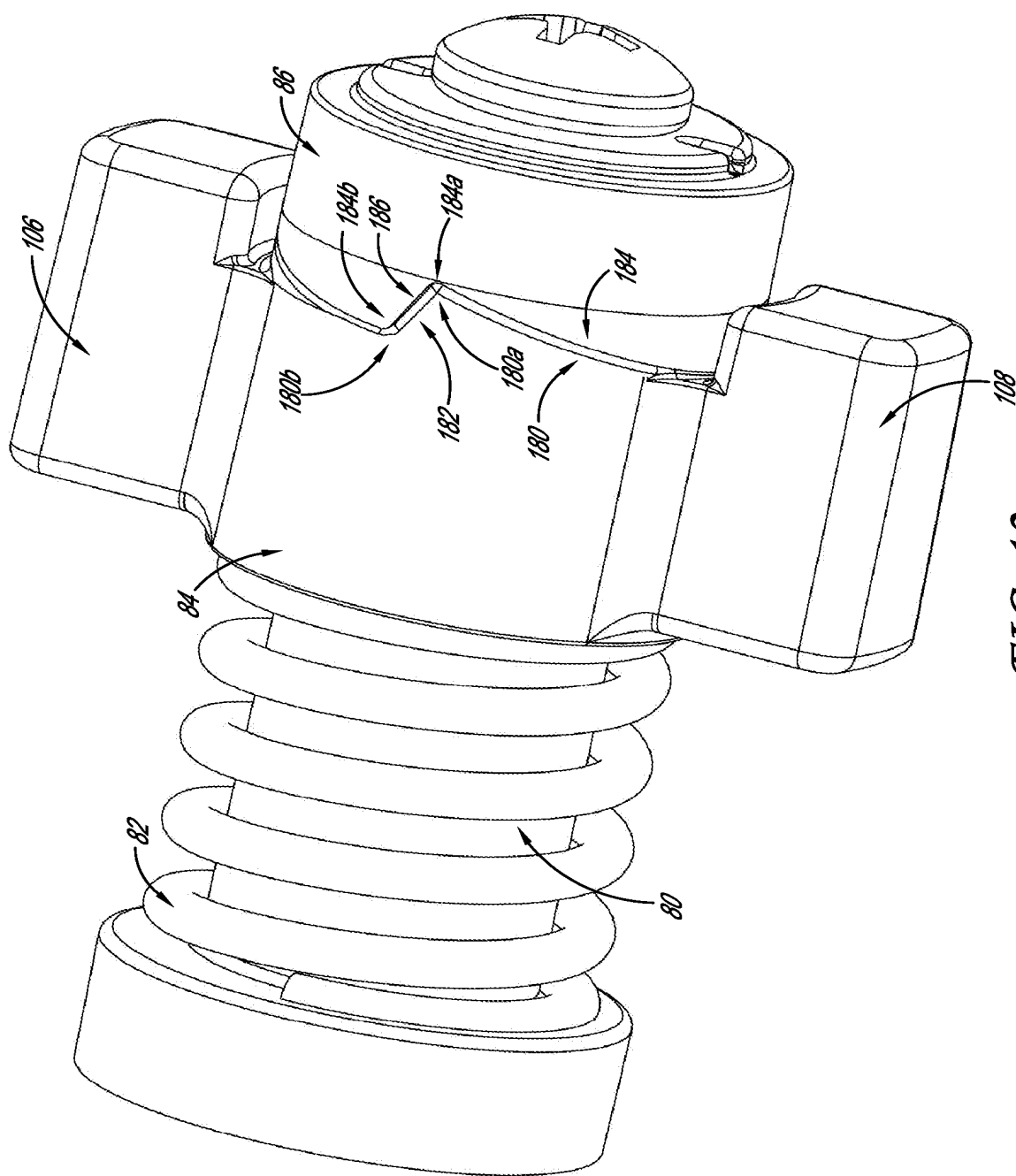


FIG. 12

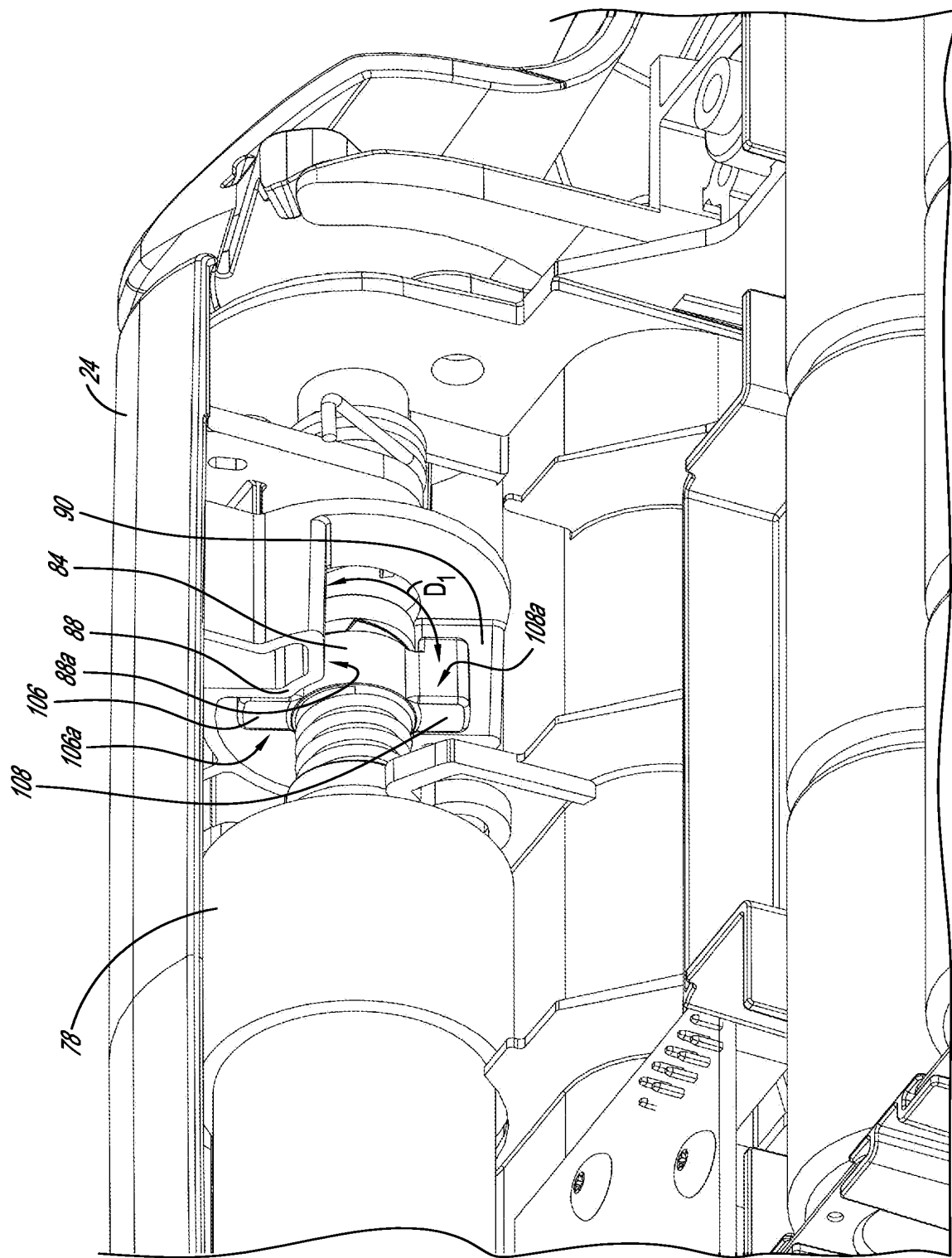


FIG. 13

Electronic Acknowledgement Receipt	
EFS ID:	30648950
Application Number:	15783370
International Application Number:	
Confirmation Number:	6434
Title of Invention:	TRASH CAN ASSEMBLY
First Named Inventor/Applicant Name:	To Be Determined
Customer Number:	20995
Filer:	Jason R. Swartz/Imran Ahmed
Filer Authorized By:	Jason R. Swartz
Attorney Docket Number:	SHUMAN.122C1
Receipt Date:	13-OCT-2017
Filing Date:	
Time Stamp:	14:48:01
Application Type:	Utility under 35 USC 111(a)

Payment information:					
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Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Application Data Sheet	ADS.pdf	1822767	no	8
			f89d7b62dcf9efe17a14ea7a0ed6a5e231f1015f		
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2		Application.pdf	141523	yes	30
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	Multipart Description/PDF files in .zip description				
	Document Description		Start	End	
	Specification		1	25	
	Claims		26	29	
	Abstract		30	30	
Warnings:					
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3	Drawings-only black and white line drawings	Drawings.pdf	6506459	no	13
			6f29372480f44f79df29226a10e34432ba586cf7		
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APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
15/783,370	10/13/2017		SHUMAN.122C1

CONFIRMATION NO. 6434

FORMALITIES LETTER



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IRVINE, CA 92614

Date Mailed: 10/30/2017

NOTICE TO FILE MISSING PARTS OF NONPROVISIONAL APPLICATION

FILED UNDER 37 CFR 1.53(b)

Filing Date Granted

Items Required To Avoid Abandonment:

An application number and filing date have been accorded to this application. The item(s) indicated below, however, are missing. Applicant is given **TWO MONTHS** from the date of this Notice within which to file all required items below to avoid abandonment. Extensions of time may be obtained by filing a petition accompanied by the extension fee under the provisions of 37 CFR 1.136(a).

- The statutory basic filing fee is missing.
- The application search fee must be submitted.
- The application examination fee must be submitted.
- The application data sheet or inventor's oath or declaration does not identify each inventor by his or her legal name.
- Surcharge as set forth in 37 CFR 1.16(f) must be submitted.

The surcharge is due for any one of:

- late submission of the basic filing fee, search fee, or examination fee,
- late submission of inventor's oath or declaration,
- filing an application that does not contain at least one claim on filing, or
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SUMMARY OF FEES DUE:

The fee(s) required within **TWO MONTHS** from the date of this Notice to avoid abandonment is/are itemized below. Small entity discount is in effect. If applicant is qualified for micro entity status, an acceptable Certification of Micro Entity Status must be submitted to establish micro entity status. (See 37 CFR 1.29 and forms PTO/SB/15A and 15B.)

- \$ 70 basic filing fee.
- \$ 70 surcharge.
- \$ 300 search fee.
- \$ 360 examination fee.
- \$(0) previous unapplied payment amount.
- \$ 800 TOTAL FEE BALANCE DUE.

Replies must be received in the USPTO within the set time period or must include a proper Certificate of Mailing or Transmission under 37 CFR 1.8 with a mailing or transmission date within the set time period. For more information and a suggested format, see Form PTO/SB/92 and MPEP 512.

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APPLICATION NUMBER	FILING or 371(c) DATE	GRP ART UNIT	FIL FEE REC'D	ATTY. DOCKET NO	TOT CLAIMS	IND CLAIMS
15/783,370	10/13/2017	3781	0.00	SHUMAN.122C1	20	3

CONFIRMATION NO. 6434

FILING RECEIPT



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Date Mailed: 10/30/2017

Receipt is acknowledged of this non-provisional patent application. The application will be taken up for examination in due course. Applicant will be notified as to the results of the examination. Any correspondence concerning the application must include the following identification information: the U.S. APPLICATION NUMBER, FILING DATE, NAME OF APPLICANT, and TITLE OF INVENTION. Fees transmitted by check or draft are subject to collection. Please verify the accuracy of the data presented on this receipt. **If an error is noted on this Filing Receipt, please submit a written request for a Filing Receipt Correction. Please provide a copy of this Filing Receipt with the changes noted thereon. If you received a "Notice to File Missing Parts" for this application, please submit any corrections to this Filing Receipt with your reply to the Notice. When the USPTO processes the reply to the Notice, the USPTO will generate another Filing Receipt incorporating the requested corrections**

Inventor(s)

None

Applicant(s)

simplehuman, LLC, Torrance, CA;

Power of Attorney: None

Domestic Priority data as claimed by applicant

This application is a CON of 13/787,638 03/06/2013 PAT 9790025
which claims benefit of 61/609,233 03/09/2012

Foreign Applications for which priority is claimed (You may be eligible to benefit from the **Patent Prosecution Highway** program at the USPTO. Please see <http://www.uspto.gov> for more information.) - None.

Foreign application information must be provided in an Application Data Sheet in order to constitute a claim to foreign priority. See 37 CFR 1.55 and 1.76.

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The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is **US 15/783,370**

Projected Publication Date: To Be Determined - pending completion of Missing Parts

Non-Publication Request: No

Early Publication Request: No

**** SMALL ENTITY ****

Title

TRASH CAN ASSEMBLY

Preliminary Class

220

Statement under 37 CFR 1.55 or 1.78 for AIA (First Inventor to File) Transition Applications: No

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Almost every country has its own patent law, and a person desiring a patent in a particular country must make an application for patent in that country in accordance with its particular laws. Since the laws of many countries differ in various respects from the patent law of the United States, applicants are advised to seek guidance from specific foreign countries to ensure that patent rights are not lost prematurely.

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Applicants may wish to consult the USPTO booklet, "General Information Concerning Patents" (specifically, the section entitled "Treaties and Foreign Patents") for more information on timeframes and deadlines for filing foreign patent applications. The guide is available either by contacting the USPTO Contact Center at 800-786-9199, or it can be viewed on the USPTO website at <http://www.uspto.gov/web/offices/pac/doc/general/index.html>.

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LICENSE FOR FOREIGN FILING UNDER
Title 35, United States Code, Section 184
Title 37, Code of Federal Regulations, 5.11 & 5.15

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The applicant has been granted a license under 35 U.S.C. 184, if the phrase "IF REQUIRED, FOREIGN FILING LICENSE GRANTED" followed by a date appears on this form. Such licenses are issued in all applications where the conditions for issuance of a license have been met, regardless of whether or not a license may be required as set forth in 37 CFR 5.15. The scope and limitations of this license are set forth in 37 CFR 5.15(a) unless an earlier license has been issued under 37 CFR 5.15(b). The license is subject to revocation upon written notification. The date indicated is the effective date of the license, unless an earlier license of similar scope has been granted under 37 CFR 5.13 or 5.14.

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The grant of a license does not in any way lessen the responsibility of a licensee for the security of the subject matter as imposed by any Government contract or the provisions of existing laws relating to espionage and the national security or the export of technical data. Licensees should apprise themselves of current regulations especially with respect to certain countries, of other agencies, particularly the Office of Defense Trade Controls, Department of State (with respect to Arms, Munitions and Implements of War (22 CFR 121-128)); the Bureau of Industry and Security, Department of Commerce (15 CFR parts 730-774); the Office of Foreign Assets Control, Department of Treasury (31 CFR Parts 500+) and the Department of Energy.

NOT GRANTED

No license under 35 U.S.C. 184 has been granted at this time, if the phrase "IF REQUIRED, FOREIGN FILING LICENSE GRANTED" DOES NOT appear on this form. Applicant may still petition for a license under 37 CFR 5.12, if a license is desired before the expiration of 6 months from the filing date of the application. If 6 months has lapsed from the filing date of this application and the licensee has not received any indication of a secrecy order under 35 U.S.C. 181, the licensee may foreign file the application pursuant to 37 CFR 5.15(b).

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PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875						Application or Docket Number 15/783,370			
APPLICATION AS FILED - PART I									
(Column 1)		(Column 2)		SMALL ENTITY		OR OTHER THAN SMALL ENTITY			
FOR	NUMBER FILED	NUMBER EXTRA	RATE(\$)	FEE(\$)		RATE(\$)	FEE(\$)		
BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A	70		N/A			
SEARCH FEE (37 CFR 1.16(k), (l), or (m))	N/A	N/A	N/A	300		N/A			
EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A	360		N/A			
TOTAL CLAIMS (37 CFR 1.16(j))	20	minus 20 = *	x 40 =	0.00	OR				
INDEPENDENT CLAIMS (37 CFR 1.16(h))	3	minus 3 = *	x 210 =	0.00					
APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is \$310 (\$155 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).			0.00					
MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))				0.00					
* If the difference in column 1 is less than zero, enter "0" in column 2.			TOTAL	730		TOTAL			
APPLICATION AS AMENDED - PART II									
(Column 1)		(Column 2)		(Column 3)		SMALL ENTITY		OR OTHER THAN SMALL ENTITY	
AMENDMENT A	CLAIMS REMAINING AFTER AMENDMENT	HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE(\$)	ADDITIONAL FEE(\$)		RATE(\$)	ADDITIONAL FEE(\$)	
	Total (37 CFR 1.16(i))	*	Minus **	=	x =	OR	x =		
	Independent (37 CFR 1.16(h))	*	Minus ***	=	x =	OR	x =		
	Application Size Fee (37 CFR 1.16(s))					OR			
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))					OR			
			TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE			
(Column 1)		(Column 2)		(Column 3)		SMALL ENTITY		OR OTHER THAN SMALL ENTITY	
AMENDMENT B	CLAIMS REMAINING AFTER AMENDMENT	HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE(\$)	ADDITIONAL FEE(\$)		RATE(\$)	ADDITIONAL FEE(\$)	
	Total (37 CFR 1.16(i))	*	Minus **	=	x =	OR	x =		
	Independent (37 CFR 1.16(h))	*	Minus ***	=	x =	OR	x =		
	Application Size Fee (37 CFR 1.16(s))					OR			
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))					OR			
			TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE			
* If the entry in column 1 is less than the entry in column 2, write "0" in column 3. ** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20". *** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3". The "Highest Number Previously Paid For" (Total or Independent) is the highest found in the appropriate box in column 1.									

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

First Inventor : Yang, *et al.*
App. No. : 15/783,370
Filed : October 13, 2017
For : TRASH CAN ASSEMBLY
Examiner : Unassigned
Art Unit : 3781
Conf. No. : 6434

PRELIMINARY AMENDMENT**Mail Stop Amendment**

Commissioner for Patents

P.O. Box 1450

Alexandria, VA 22313-1450

Dear Commissioner:

Before examining the above-identified application on the merits, please enter the following:

Amendments to the Claims, which begin on page 2; and

Remarks, which begin on page 6.

AMENDMENTS TO THE CLAIMS

Please amend the claims as follows.

1.-20. (Canceled)

21. (New) A trash can assembly comprising:

a body component comprising a lower base, an upper opening, and a front upper edge; and

a lid assembly configured to couple with the body component, the lid assembly comprising:

a lid configured to rotate, relative to the body, between a lower position and an upper position;

a motor configured to drive the lid between the lower position and the upper position; and

a trim member configured to rotate between a closed position and an open position, wherein:

in the closed position, a front of the trim member is adjacent the front upper edge of the body component; and

in the open position, the front of the trim member is spaced apart from and vertically higher than the front upper edge of the body component; and

a retaining mechanism configured to maintain the trim member in the open position against the force of gravity.

22. (New) The trash can assembly of Claim 21, wherein the lid assembly further comprises an electronic sensor, wherein the motor is configured to be activated in response to a signal from the electronic sensor, and wherein the trash can assembly is configured such that the electronic sensor is disabled when the trim member is in the open position.

23. (New) The trash can assembly of Claim 21, wherein the retaining mechanism comprises a detent.

24. (New) The trash can assembly of Claim 21, wherein, in the open position, the trim member is at an acute angle with respect to a longitudinal axis of the body component.

25. (New) The trash can assembly of Claim 21, wherein the retaining mechanism comprises a cam structure and a recess, the cam structure configured to be received in the recess when the trim member is in the open position.

26. (New) The trash can assembly of Claim 25, wherein:
the retaining mechanism further comprises a ramp; and
the trash can assembly is configured such that, as the trim member rotates from the closed position to the open position, the cam structure slides along the ramp and engages into the recess.

27. (New) The trash can assembly of Claim 26, wherein:
the cam structure is positioned on the trim ring; and
the ramp is positioned on a backside enclosure that is positioned on an exterior surface of a rear wall of the trash can assembly.

28. (New) The trash can assembly of Claim 21, wherein:
a majority of the periphery of the lid is received in the trim member when the trim member is in the closed position and the lid is in the lower position; and
a majority of the periphery of the lid is positioned outside of the trim member when the trim member is in the closed position and the lid is in the upper position.

29. (New) The trash can assembly of Claim 21, wherein, when the lid is in the lower position and the trim ring is in the closed position, the entire periphery of the lid is received in the trim ring.

30. (New) The trash can assembly of Claim 21, wherein the trim member and the lid are configured to rotate about the same axis.

31. (New) The trash can assembly of Claim 21, wherein the trim member further comprises an exterior wall that extends:

generally parallel with a longitudinal axis of the trash can;
downward beyond an upper lip of the body component; and
radially outward from the upper lip of the body component.

32. (New) The trash can assembly of Claim 21, wherein the body component has a rectangular shape.

33. (New) The trash can assembly of Claim 21, wherein at least a front half of the body portion has a generally cylindrical shape.

34. (New) The trash can assembly of Claim 21, further comprising a motor configured to drive the lid between the lower and upper positions.

35. (New) A method of mounting a trash bag, the method comprising:

obtaining a trash can assembly comprising a body component, a lid, and a trim ring, the lid and the trim ring each configured to rotate relative to the body component;

rotating the trim ring from a closed position to an open position;

engaging the trim ring with a retaining mechanism;

maintaining the trim ring in the open position against the force of gravity with the retaining mechanism, the trim ring being held in the open position at an acute angle with respect to a longitudinal axis of the body component;

inserting a trash bag into the trash can assembly;

positioning an upper portion of the trash bag over an upper edge of the body component;

disengaging the trim ring from the retaining mechanism; and

rotating the trim ring from the open position to the closed position.

36. (New) The method of Claim 35, further comprising visually obscuring, with the trim ring, the upper portion of the trash bag and the upper edge of the body component.

37. (New) The method of Claim 35, further comprising rotating the lid from a lower position to an upper position, rotating the lid from the upper position the lower position, and receiving the entire periphery of the lid in the trim ring.

38. (New) The method of Claim 35, wherein rotating the trim ring from the closed position to the open position further comprises rotating the trim ring about the same axis as the lid.

39. (New) The method of Claim 35, wherein engaging the trim ring with the retaining mechanism comprises engaging the trim ring with a detent.

40. (New) The method of Claim 35, wherein engaging the trim ring with the retaining mechanism comprises sliding a cam structure along a ramp in a first direction, and receiving the cam structure in a recess.

41. (New) The method of Claim 40, wherein disengaging the trim ring with the retaining mechanism comprises removing the cam structure from the recess, and sliding the cam structure along the ramp in a second direction that is generally opposite the first direction.

Application No.: 15/783,370
Filing Date: October 13, 2017

REMARKS

Please enter this preliminary amendment before examination of this application. As indicated above, Applicant has canceled Claims 1-20 without prejudice or disclaimer, and has added Claims 21-41. Thus, Claims 21-41 are now pending for examination.

Although this communication may include alterations to the claims, Applicant is not conceding that the previously pending claims were not patentable. Rather, any alterations are being made to facilitate expeditious prosecution of this application. Applicant reserves the right to pursue at a later date any previously pending or other broader or narrower claims that capture any subject matter supported by the present disclosure, including subject matter found to be specifically disclaimed herein or by any prior prosecution. Accordingly, reviewers of this or any parent, child, or related prosecution history shall not reasonably infer that Applicant has made any disclaimers or disavowals of any subject matter supported by this application.

Please charge any additional fees, including any fees for additional extension of time, or credit overpayment to Deposit Account No. 11-1410.

Respectfully submitted,

KNOBBE, MARTENS, OLSON & BEAR, LLP

Dated: December 27, 2017

By: Jason R. Swartz/

Jason Swartz

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Registered Practitioner

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26879110

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RESCISSION OF ANY PRIOR DISCLAIMERS AND REQUEST TO REVISIT ART

Inventor	: Yang, <i>et al.</i>
App. No	: 15/783,370
Filed	: October 13, 2017
For	: TRASH CAN ASSEMBLY
Examiner	: Unassigned
Art Unit	: 3781
Conf #	: 6434

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Commissioner:

The claims of the present application are different from and possibly broader in scope than the claims pursued in the parent application. To the extent any prior amendments or characterizations of the scope of any claim or referenced art could be construed as a disclaimer of any subject matter supported by the present disclosure, Applicant hereby rescinds and retracts such disclaimer. The references previously considered in the parent application may need to be re-visited.

Please charge any additional fees, including any fees for additional extension of time, or credit overpayment to Deposit Account No. 11-1410.

Knobbe, Martens, Olson & Bear, LLP

Respectfully submitted,

Dated: December 27, 2017

/Jason R. Swartz/

Jason Swartz

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27293358

CORRECTIVE APPLICATION DATA SHEET**Application Information**

Application Number: 15/783370
Filing Date: October 13, 2017
Application Type: Nonprovisional
Subject Matter: Utility
Title: TRASH CAN ASSEMBLY
Attorney Docket Number: SHUMAN.122C1
Total Drawing Sheets: 13
Small Entity?: Yes

Inventor Information**Inventor 1**

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Dated: December 27, 2017

By: Jason R. Swartz/

Jason R. Swartz
Registration No. 64,420
Attorney of Record
Customer No. 20995
(949) 760-0404

27293263

Electronic Patent Application Fee Transmittal				
Application Number:	15783370			
Filing Date:	13-Oct-2017			
Title of Invention:	TRASH CAN ASSEMBLY			
First Named Inventor/Applicant Name:				
Filer:	Jason R. Swartz/Lisa Sierra			
Attorney Docket Number:	SHUMAN.122C1			
Filed as Small Entity				
Filing Fees for Utility under 35 USC 111(a)				
Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Basic Filing:				
UTILITY FILING FEE (ELECTRONIC FILING)	4011	1	70	70
UTILITY SEARCH FEE	2111	1	300	300
UTILITY EXAMINATION FEE	2311	1	360	360
Pages:				
Claims:				
CLAIMS IN EXCESS OF 20	2202	1	40	40
Miscellaneous-Filing:				
LATE FILING FEE FOR OATH OR DECLARATION	2051	1	70	70

Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				
Miscellaneous:				
Total in USD (\$)				840

Electronic Acknowledgement Receipt

EFS ID:	31343188
Application Number:	15783370
International Application Number:	
Confirmation Number:	6434
Title of Invention:	TRASH CAN ASSEMBLY
First Named Inventor/Applicant Name:	
Customer Number:	20995
Filer:	Jason R. Swartz/Jennifer Neat
Filer Authorized By:	Jason R. Swartz
Attorney Docket Number:	SHUMAN.122C1
Receipt Date:	27-DEC-2017
Filing Date:	13-OCT-2017
Time Stamp:	17:10:43
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	CARD
Payment was successfully received in RAM	\$840
RAM confirmation Number	122817INTEFSW17113500
Deposit Account	111410
Authorized User	Jennifer Neat

The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:

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37 CFR 1.17 (Patent application and reexamination processing fees)

VOLUME DISTRIBUTORS, Ex. 1002

VOLUME DISTRIBUTORS, INC. v. SIMPLEHUMAN LLC, IPR2024-00050

File Listing:					
Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Applicant Response to Pre-Exam Formalities Notice	MParts_Response.pdf	18555	no	1
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Warnings:					
Information:					
2	Oath or Declaration filed	Declaration.pdf	588620	no	9
			f5c37cec8b0b725a051edd1c5d64be9c2672a5ee		
Warnings:					
Information:					
3	Power of Attorney	POA.pdf	1264194	no	2
			bd12ec0d32278c3c41e15dc2592767d0f6f5ceb8		
Warnings:					
Information:					
4		Prelim_Amendment.pdf	35008	yes	6
			d9a6a89e5dce83c298b2c967f7e3dd46f9058347		
	Multipart Description/PDF files in .zip description				
	Document Description		Start	End	
	Preliminary Amendment		1	1	
	Claims		2	5	
	Applicant Arguments/Remarks Made in an Amendment		6	6	
Warnings:					
Information:					
5	Miscellaneous Incoming Letter	Rescission.pdf	17626	no	1
			4a6af02253f638fd6f3c4685e3407fecb80e2		
VOLUME DISTRIBUTORS, INC. v. SIMPLIHUMAN LLC, IPR2024-00050					

Warnings:					
Information:					
6	Application Data Sheet	Corrective_ADS_SHUMAN122C1.pdf	21132 5c3f3caf5dad4148b6d03b38bb0f68719a0cf81e	no	5
Warnings:					
Information:					
This is not an USPTO supplied ADS fillable form					
7	Fee Worksheet (SB06)	fee-info.pdf	38347 55f4b196c3048011932cbdfc86616cd20b170554	no	2
Warnings:					
Information:					
Total Files Size (in bytes):			1983482		
<p>This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.</p> <p><u>New Applications Under 35 U.S.C. 111</u> If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.</p> <p><u>National Stage of an International Application under 35 U.S.C. 371</u> If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.</p> <p><u>New International Application Filed with the USPTO as a Receiving Office</u> If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.</p>					

Electronic Acknowledgement Receipt

EFS ID:	31343188
Application Number:	15783370
International Application Number:	
Confirmation Number:	6434
Title of Invention:	TRASH CAN ASSEMBLY
First Named Inventor/Applicant Name:	
Customer Number:	20995
Filer:	Jason R. Swartz/Jennifer Neat
Filer Authorized By:	Jason R. Swartz
Attorney Docket Number:	SHUMAN.122C1
Receipt Date:	27-DEC-2017
Filing Date:	13-OCT-2017
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37 CFR 1.17 (Patent application and reexamination processing fees)

VOLUME DISTRIBUTORS, Ex. 1002

VOLUME DISTRIBUTORS, INC. v. SIMPLEHUMAN LLC, IPR2024-00050

File Listing:					
Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Applicant Response to Pre-Exam Formalities Notice	MParts_Response.pdf	18555	no	1
			de1e89cf481e72176d4bc2aeebb5ea4fd4c603c		
Warnings:					
Information:					
2	Oath or Declaration filed	Declaration.pdf	588620	no	9
			f5c37cec8b0b725a051edd1c5d64be9c2672a5ee		
Warnings:					
Information:					
3	Power of Attorney	POA.pdf	1264194	no	2
			bd12ec0d32278c3c41e15dc2592767d0f6f5ceb8		
Warnings:					
Information:					
4		Prelim_Amendment.pdf	35008	yes	6
			d9a6a89e5dce83c298b2c967f7e3dd46f9058347		
	Multipart Description/PDF files in .zip description				
	Document Description		Start	End	
	Preliminary Amendment		1	1	
	Claims		2	5	
	Applicant Arguments/Remarks Made in an Amendment		6	6	
Warnings:					
Information:					
5	Miscellaneous Incoming Letter	Rescission.pdf	17626	no	1
			4a6af02253f638fd6f3c4685e3407fecb80e2		
VOLUME DISTRIBUTORS, INC. v. SIMPLIHUMAN LLC, IPR2024-00050					

Warnings:					
Information:					
6	Application Data Sheet	Corrective_ADS_SHUMAN122C 1.pdf	21132 5c3f3caf5dad4148b6d03b38bb0f68719a0c f81e	no	5
Warnings:					
Information:					
This is not an USPTO supplied ADS fillable form					
7	Fee Worksheet (SB06)	fee-info.pdf	38347 55f4b196c3048011932cbdfc86616cd20b1 70554	no	2
Warnings:					
Information:					
Total Files Size (in bytes):			1983482		
<p>This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.</p> <p><u>New Applications Under 35 U.S.C. 111</u> If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.</p> <p><u>National Stage of an International Application under 35 U.S.C. 371</u> If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.</p> <p><u>New International Application Filed with the USPTO as a Receiving Office</u> If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.</p>					

Please Direct All Correspondence to Customer Number 20995

RESPONSE TO FORMALITIES NOTICE

Inventor	: Yang, <i>et al.</i>
App. No.	: 15/783,370
Filed	: October 13, 2017
For	: TRASH CAN ASSEMBLY
Art Unit	: 3781
Conf No.	: 6434

Mail Stop Missing Parts

Commissioner for Patents

P.O. Box 1450

Alexandria, VA 22313-1450

Dear Commissioner:

In response to the Notice to File Missing Parts of Nonprovisional Application dated October 30, 2017, enclosed are:

- (X) An Executed Declaration by Inventors in 9 pages;
- (X) A Corrective Application Data Sheet in 4 pages;
- (X) A Power of Attorney by Applicant in 2 pages;
- (X) A Preliminary Amendment in 6 pages;
- (X) A Rescission of Any Prior Disclaimers and Request to Revisit Art in 1 page; and
- (X) Fees, which will be paid via EFS Web. Any extension of time will be requested by payment of the appropriate extension fee. The present application qualifies for small entity status under 37 CFR § 1.27.

The Commissioner is hereby authorized to charge any additional fees that may be required, now or in the future, or credit any overpayment, to Account No. 11-1410.

/Jason R. Swartz/

Jason Swartz

Registration No. 64,420

Registered Practitioner

Customer No. 20995

(949) 760-0404

27293216

COPY FROM PARENT

COMBINED DECLARATION & ASSIGNMENT (37 C.F.R. § 1.63(e))

Application Data Sheet filed previously or concurrently

Docket No.: SHUMAN.122A

Page 1 of 9

Title: TRASH CAN WITH CLUTCHING AND LINER RETENTION FEATURES

Inventors: Frank Yang, David Wolbert, Joseph Sandor, Kenneth Yen, Orlando Cardenas, Michael Basha, and Christopher Fruhauf

Declaration

This Declaration is directed to the application that was filed with the United States Patent and Trademark Office on March 6, 2013 as Application No. 13/787,638.

As a named inventor, I declare that:

The above-identified application was made or authorized to be made by me;

I believe that I am the original inventor or an original joint inventor in the application;

I hereby acknowledge that any willful false statement made in this declaration is punishable under 18 U.S.C. § 1001 by fine or imprisonment of not more than five years, or both;

I have reviewed and understand the contents of the above-identified application, including the claims, as amended by any amendment; and

I acknowledge the duty to disclose information which is material to patentability as defined in 37 C.F.R. § 1.56.

Assignment from Inventors

WHEREAS, **above-identified inventors** (individuals hereinafter "ASSIGNOR") invented certain new and useful improvements, technology, inventions, developments, ideas, ornamental designs, or discoveries, and hereby assign or are under an obligation to assign to the below-identified Assignee the above-titled application (collectively hereinafter referred to as the "Work") for which an application for Letters Patent in the United States was filed with the United States Patent and Trademark Office on March 6, 2013 as Application No. 13/787,638 (hereinafter the "Application").

AND WHEREAS, **simplehuman, LLC**, with its principal place of business at 19850 Magellan Drive, Torrance, CA 90502 (hereinafter the "ASSIGNEE"), desires to acquire the entire right, title, and interest in and to the Application and the Work.

NOW, THEREFORE, for good and valuable consideration of which receipt is hereby acknowledged, ASSIGNOR hereby acknowledges that ASSIGNOR has sold, assigned, transferred and set over, and by these presents does hereby sell, assign, transfer and set over, unto said ASSIGNEE, its successors, legal representatives and assigns, the entire right, title, and interest throughout the world in the Application and the Work, including all patent properties filed or issued upon the Application and the Work; where "Patent Properties" include, but are not limited to:

all provisional applications relating thereto (including but not limited to U.S. Provisional Application No. 61/609,233, filed March 9, 2012);

all nonprovisional applications claiming priority to aforementioned provisional(s) and/or the present Application, including, all divisions, continuations, continuations-in-part, and reissues, and all Letters Patent of the United States which may be granted thereon and all reissues and extensions thereof; and

all rights of priority under International Conventions and any related Letters Patent which may hereafter be granted or filed in any country or countries foreign to the United States, all extensions, renewals and reissues thereof.

ASSIGNOR hereby acknowledges the ASSIGNEE as the Applicant for all aforementioned patent properties, and authorizes and requests the Commissioner of Patents of the United States, and any

COMBINED DECLARATION & ASSIGNMENT (37 C.F.R. § 1.63(e))

Application Data Sheet filed previously or concurrently

Docket No.: SHUMAN.122A

Page 2 of 9

Title: TRASH CAN WITH CLUTCHING AND LINER RETENTION FEATURES

Inventors: Frank Yang, David Wolbert, Joseph Sandor, Kenneth Yen, Orlando Cardenas, Michael Basha,
and Christopher Fruhauf

Official of any country or countries foreign to the United States, whose duty it is to issue patents on applications as aforesaid, to issue all related Letters Patent to the ASSIGNEE, its successors, legal representatives and assigns, in accordance with the terms of this instrument.

AND ASSIGNOR DOES HEREBY sell, assign, transfer, and convey to ASSIGNEE, its successors, legal representatives, and assigns all claims for damages and all remedies arising out of any violation of the rights assigned hereby that may have accrued prior to the date of assignment to ASSIGNEE, or may accrue hereafter, including, but not limited to, the right to sue for, collect, and retain damages for past infringements of said Letters Patent before or after issuance.

AND ASSIGNOR DOES HEREBY covenant and agree that ASSIGNOR will communicate to said ASSIGNEE, its successors, legal representatives and assigns, any facts known to ASSIGNOR respecting the Work, and testify in any legal proceeding, assist in the preparation of any other Patent Property relating to the Application and the Work or any improvements made thereto, sign/execute all lawful papers, execute and make all rightful oaths and/or declarations in connection with the Application and the Work including any improvements made thereto, any patent applications filed therefrom, and any continuing application filed from any of the aforementioned applications, and generally do everything possible to aid the ASSIGNEE, its successors, legal representatives and assigns, to obtain and enforce proper patent protection for the Work in all countries.

COMBINED DECLARATION & ASSIGNMENT (37 C.F.R. § 1.63(e))

Application Data Sheet filed previously or concurrently

Docket No.: SHUMAN.122A

Page 3 of 9

Title: TRASH CAN WITH CLUTCHING AND LINER RETENTION FEATURES

Inventors: Frank Yang, David Wolbert, Joseph Sandor, Kenneth Yen, Orlando Cardenas, Michael Basha,
and Christopher Fruhauf

Legal Name of inventor: Frank Yang

Residence: 6847 Alta Vista Drive, Rancho Palos Verdes, California 90275

IN TESTIMONY WHEREOF, I hereunto set my hand and seal this 20 day of August, 2013.

Signature: 

Date: 8/20/2013

Signature before a Notary is desirable but not required.

STATE OF CALIFORNIA

ss.

COUNTY OF _____

On _____, before me, _____, notary public, personally appeared Frank Yang who proved to me on the basis of satisfactory evidence to be the person(s) whose name(s) is/are subscribed to the within instrument, and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies), and that by his/her/their signature(s) on the instrument the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument.

I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing paragraph is true and correct.

WITNESS my hand and official seal.

Notary Signature

[SEAL]

COMBINED DECLARATION & ASSIGNMENT (37 C.F.R. § 1.63(e))*Application Data Sheet filed previously or concurrently*

Docket No.: SHUMAN.122A

Page 4 of 9

Title: TRASH CAN WITH CLUTCHING AND LINER RETENTION FEATURES

Inventors: Frank Yang, David Wolbert, Joseph Sandor, Kenneth Yen, Orlando Cardenas, Michael Basha,
and Christopher Fruhauf

Legal Name of inventor: David Wolbert

Residence: 1715 Herrin Street, Redondo Beach, California 90278

IN TESTIMONY WHEREOF, I hereunto set my hand and seal this 20th day of August, 2013.Signature: *David Wolbert*Date: 8/20/13*Signature before a Notary is desirable but not required.*

STATE OF CALIFORNIA

} ss.

COUNTY OF _____

On _____, before me, _____, notary public, personally appeared David Wolbert who proved to me on the basis of satisfactory evidence to be the person(s) whose name(s) is/are subscribed to the within instrument, and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies), and that by his/her/their signature(s) on the instrument the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument.

I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing paragraph is true and correct.

WITNESS my hand and official seal.

Notary Signature

[SEAL]

COMBINED DECLARATION & ASSIGNMENT (37 C.F.R. § 1.63(e))

Application Data Sheet filed previously or concurrently

Docket No.: SHUMAN.122A

Page 5 of 9

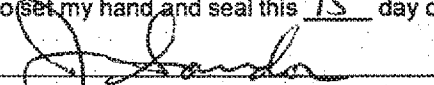
Title: TRASH CAN WITH CLUTCHING AND LINER RETENTION FEATURES

Inventors: Frank Yang, David Wolbert, Joseph Sandor, Kenneth Yen, Orlando Cardenas, Michael Basha,
and Christopher Fruhauf

Legal Name of inventor: Joseph Sandor

Residence: 1521 Pegasus Street, Newport Beach, California 92660

IN TESTIMONY WHEREOF, I hereunto set my hand and seal this 15 day of AUGUST, 2013.

Signature: 

Date: 8/15/2013

Signature before a Notary is desirable but not required.

STATE OF CALIFORNIA

} ss.

COUNTY OF _____

On _____, before me, _____, notary public, personally appeared Joseph Sandor who proved to me on the basis of satisfactory evidence to be the person(s) whose name(s) is/are subscribed to the within instrument, and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies), and that by his/her/their signature(s) on the instrument the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument.

I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing paragraph is true and correct.

WITNESS my hand and official seal.

Notary Signature

[SEAL]

COMBINED DECLARATION & ASSIGNMENT (37 C.F.R. § 1.63(e))

Application Data Sheet filed previously or concurrently

Docket No.: SHUMAN.122A

Page 6 of 9

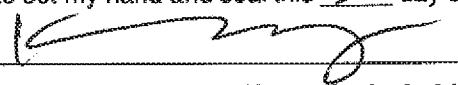
Title: TRASH CAN WITH CLUTCHING AND LINER RETENTION FEATURES

Inventors: Frank Yang, David Wolbert, Joseph Sandor, Kenneth Yen, Orlando Cardenas, Michael Basha,
and Christopher Fruhauf

Legal Name of inventor: Kenneth Yen

Residence: 1604 Cabrillo Avenue #2, Torrance, California 90501

IN TESTIMONY WHEREOF, I hereunto set my hand and seal this 20 day of August, 2013.

Signature: 

Date: 8/20/2013

Signature before a Notary is desirable but not required.

STATE OF CALIFORNIA

} ss.

COUNTY OF _____

On _____, before me, _____, notary public, personally appeared Kenneth Yen who proved to me on the basis of satisfactory evidence to be the person(s) whose name(s) is/are subscribed to the within instrument, and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies), and that by his/her/their signature(s) on the instrument the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument.

I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing paragraph is true and correct.

WITNESS my hand and official seal.

Notary Signature

[SEAL]

COMBINED DECLARATION & ASSIGNMENT (37 C.F.R. § 1.63(e))

Application Data Sheet filed previously or concurrently

Docket No.: SHUMAN.122A

Page 7 of 9

Title: TRASH CAN WITH CLUTCHING AND LINER RETENTION FEATURES

Inventors: Frank Yang, David Wolbert, Joseph Sandor, Kenneth Yen, Orlando Cardenas, Michael Basha,
and Christopher Fruhauf

Legal Name of inventor: Orlando Cardenas

Residence: 29252 Alfieri, Laguna Niguel, California 92677

IN TESTIMONY WHEREOF, I hereunto set my hand and seal this 20 day of August, 2013

Signature: *Orlando Cardenas* Date: 8/20/2013

Signature before a Notary is desirable but not required.

STATE OF CALIFORNIA

COUNTY OF _____

} ss.

On _____, before me, _____, notary public, personally appeared Orlando Cardenas who proved to me on the basis of satisfactory evidence to be the person(s) whose name(s) is/are subscribed to the within instrument, and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies), and that by his/her/their signature(s) on the instrument the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument.

I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing paragraph is true and correct.

WITNESS my hand and official seal.

Notary Signature

[SEAL]

COMBINED DECLARATION & ASSIGNMENT (37 C.F.R. § 1.63(e))*Application Data Sheet filed previously or concurrently*

Docket No.: SHUMAN.122A

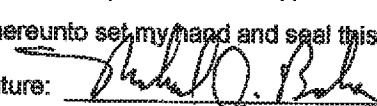
Page 8 of 9

Title: TRASH CAN WITH CLUTCHING AND LINER RETENTION FEATURES

Inventors: Frank Yang, David Wolbert, Joseph Sandor, Kenneth Yan, Orlando Cardenas, Michael Basha, and Christopher Fruhauf

Legal Name of Inventor: Michael Basha

Residence: 632 Callippe Court, Brisbane, California 94005

IN TESTIMONY WHEREOF, I hereunto set my hand and seal this 25th day of April, 2013.Signature: Date: 4/25/2013*Signature before a Notary is desirable but not required.*

STATE OF CALIFORNIA

} ss.

COUNTY OF _____

On _____, before me, _____, notary public, personally appeared Frank Yang who proved to me on the basis of satisfactory evidence to be the person(s) whose name(s) is/are subscribed to the within instrument, and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies), and that by his/her/their signature(s) on the instrument the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument.

I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing paragraph is true and correct.

WITNESS my hand and official seal.

[SEAL]

Notary Signature

COMBINED DECLARATION & ASSIGNMENT (37 C.F.R. § 1.63(e))*Application Data Sheet filed previously or concurrently*

Docket No.: SHUMAN.122A

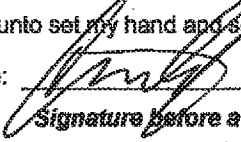
Page 9 of 9

Title: TRASH CAN WITH CLUTCHING AND LINER RETENTION FEATURES

Inventors: Frank Yang, David Wolbert, Joseph Sandor, Kenneth Yen, Orlando Cardenas, Michael Basha,
and Christopher Fruhauf

Legal Name of inventor: Christopher Fruhauf

Residence: 21 Kerrick Avenue, San Anselmo, California 94960

IN TESTIMONY WHEREOF, I hereunto set my hand and seal this 25th day of APRIL, 2013.Signature: Date: 4-25-13*Signature before a Notary is desirable but not required.*

STATE OF CALIFORNIA

ss.

COUNTY OF _____

On _____, before me, _____, notary public, personally appeared Frank Yang who proved to me on the basis of satisfactory evidence to be the person(s) whose name(s) is/are subscribed to the within instrument, and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies), and that by his/her/their signature(s) on the instrument the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument.

I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing paragraph is true and correct.

WITNESS my hand and official seal.

Notary Signature

[SEAL]

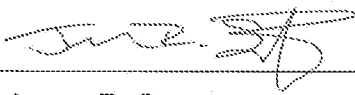
14938179

TRANSMITTAL FOR POWER OF ATTORNEY TO ONE OR MORE REGISTERED PRACTITIONERS

NOTE: This form is to be submitted with the Power of Attorney by Applicant form (PTO/AIA/82B) to identify the application to which the Power of Attorney is directed, in accordance with 37 CFR 1.5, unless the application number and filing date are identified in the Power of Attorney by Applicant form. If neither form PTO/AIA/82A nor form PTO/AIA/82B identifies the application to which the Power of Attorney is directed, the Power of Attorney will not be recognized in the application.

Application Number	15/783,370
Filing Date	October 13, 2017
First Named Inventor	Yang, et al.
Title	TRASH CAN ASSEMBLY
Art Unit	3781
Examiner Name	Unassigned
Attorney Docket Number	SHUMAN.122C1

SIGNATURE of Applicant or Patent Practitioner

Signature		Date (Optional)	December 27, 2017
Name	Jason R. Swartz	Registration Number	64,420
Title (if Applicant is a juristic entity)	Attorney for Applicant		
Applicant Name (if Applicant is a juristic entity)		simplehuman, LLC	

NOTE: This form must be signed in accordance with 37 CFR 1.33. See 37 CFR 1.4(d) for signature requirements and certifications. If more than one applicant, use multiple forms.



*Total of 1 forms are submitted.

This collection of information is required by 37 CFR 1.131, 1.32, and 1.33. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 3 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

POWER OF ATTORNEY BY APPLICANT

I hereby revoke all previous powers of attorney given in the application identified in the attached transmittal letter.

- ☒ I hereby appoint Practitioner(s) associated with the following Customer Number as my/our attorney(s) or agent(s), and to transact all business in the United States Patent and Trademark Office connected therewith for the application referenced in the attached transmittal letter (form PTO/AIA/82A or equivalent):

20995

OR

- ☐ I hereby appoint Practitioner(s) named below as my/our attorney(s) or agent(s), and to transact all business in the United States Patent and Trademark Office connected therewith for the application referenced in the attached transmittal letter (form PTO/AIA/82A or equivalent):

Name	Registration Number	Name	Registration Number

Please recognize or change the correspondence address for the application identified in the attached transmittal letter to:

- ☒ The address associated with the above-mentioned Customer Number.

OR

- ☐ The address associated with Customer Number:

OR

☐ Firm or Individual Name

Address

City

State

Zip

Country

Telephone

Email

I am the Applicant:

- ☐ Inventor or Joint Inventor
- ☐ Legal Representative of a Deceased or Legally Incapacitated Inventor
- ☒ Assignee or Person to Whom the Inventor is Under an Obligation to Assign
- ☐ Person Who Otherwise Shows Sufficient Proprietary Interest (e.g., a petition under 37 CFR 1.46(b)(2) was granted in the application or is concurrently being filed with this document)

SIGNATURE of Applicant for Patent

Signature

Date

Name

Frank Yang

Telephone

310-436-2250

Title and Company

Chief Executive Officer, simplehuman, LLC

NOTE: Signature - This form must be signed by the applicant in accordance with 37 CFR 1.33. See 37 CFR 1.4 for signature requirements and certifications. Submit multiple forms for more than one signature, see below *:

- ☐ *Total of _____ forms are submitted.

This collection of information is required by 37 CFR 1.31, 1.32 and 1.33. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 3 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875						Application or Docket Number 15/783,370				
APPLICATION AS FILED - PART I										
(Column 1)		(Column 2)		SMALL ENTITY		OR OTHER THAN SMALL ENTITY				
FOR	NUMBER FILED	NUMBER EXTRA	RATE(\$)	FEE(\$)		RATE(\$)	FEE(\$)			
BASIC FEE <small>(37 CFR 1.16(a), (b), or (c))</small>	N/A	N/A	N/A	70		N/A				
SEARCH FEE <small>(37 CFR 1.16(k), (l), or (m))</small>	N/A	N/A	N/A	300		N/A				
EXAMINATION FEE <small>(37 CFR 1.16(o), (p), or (q))</small>	N/A	N/A	N/A	360		N/A				
TOTAL CLAIMS <small>(37 CFR 1.16(j))</small>	21	minus 20 = *	1	x 40 =	40					
INDEPENDENT CLAIMS <small>(37 CFR 1.16(h))</small>	2	minus 3 = *		x 210 =	0.00					
APPLICATION SIZE FEE <small>(37 CFR 1.16(s))</small>	If the specification and drawings exceed 100 sheets of paper, the application size fee due is \$310 (\$155 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).				0.00					
MULTIPLE DEPENDENT CLAIM PRESENT <small>(37 CFR 1.16(j))</small>					0.00					
			TOTAL	770		TOTAL				
* If the difference in column 1 is less than zero, enter "0" in column 2.										
APPLICATION AS AMENDED - PART II										
(Column 1)		(Column 2)		(Column 3)		SMALL ENTITY		OR OTHER THAN SMALL ENTITY		
AMENDMENT A		CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE(\$)	ADDITIONAL FEE(\$)		RATE(\$)	ADDITIONAL FEE(\$)
	Total <small>(37 CFR 1.16(i))</small>	*	Minus	**	=	x	=		x	=
	Independent <small>(37 CFR 1.16(h))</small>	*	Minus	***	=	x	=		x	=
	Application Size Fee <small>(37 CFR 1.16(s))</small>									
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM <small>(37 CFR 1.16(j))</small>									
						TOTAL ADD'L FEE			TOTAL ADD'L FEE	
AMENDMENT B		CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE(\$)	ADDITIONAL FEE(\$)		RATE(\$)	ADDITIONAL FEE(\$)
	Total <small>(37 CFR 1.16(i))</small>	*	Minus	**	=	x	=		x	=
	Independent <small>(37 CFR 1.16(h))</small>	*	Minus	***	=	x	=		x	=
	Application Size Fee <small>(37 CFR 1.16(s))</small>									
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM <small>(37 CFR 1.16(j))</small>									
						TOTAL ADD'L FEE			TOTAL ADD'L FEE	
* If the entry in column 1 is less than the entry in column 2, write "0" in column 3. ** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20". *** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3". The "Highest Number Previously Paid For" (Total or Independent) is the highest found in the appropriate box in column 1.										



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NUMBER	FILING or 371(c) DATE	GRP ART UNIT	FIL FEE REC'D	ATTY. DOCKET NO	TOT CLAIMS	IND CLAIMS
15/783,370	10/13/2017	3781	840	SHUMAN.122C1	21	2

CONFIRMATION NO. 6434
UPDATED FILING RECEIPT

20995
KNOBBE MARTENS OLSON & BEAR LLP
2040 MAIN STREET
FOURTEENTH FLOOR
IRVINE, CA 92614



Date Mailed: 12/29/2017

Receipt is acknowledged of this non-provisional patent application. The application will be taken up for examination in due course. Applicant will be notified as to the results of the examination. Any correspondence concerning the application must include the following identification information: the U.S. APPLICATION NUMBER, FILING DATE, NAME OF APPLICANT, and TITLE OF INVENTION. Fees transmitted by check or draft are subject to collection. Please verify the accuracy of the data presented on this receipt. **If an error is noted on this Filing Receipt, please submit a written request for a Filing Receipt Correction. Please provide a copy of this Filing Receipt with the changes noted thereon. If you received a "Notice to File Missing Parts" for this application, please submit any corrections to this Filing Receipt with your reply to the Notice. When the USPTO processes the reply to the Notice, the USPTO will generate another Filing Receipt incorporating the requested corrections**

Inventor(s)

Frank Yang, Rancho Palos Verdes, CA;
David Wolbert, Redondo Beach, CA;
Joseph Sandor, Newport Beach, CA;
Kenneth Yen, Torrance, CA;
Orlando Cardenas, Laguna Niguel, CA;
Michael James Basha, Brisbane, CA;
Christopher B. Fruhauf, San Anselmo, CA;

Applicant(s)

simplehuman, LLC, Torrance, CA;

Power of Attorney: The patent practitioners associated with Customer Number 20995

Domestic Priority data as claimed by applicant

This application is a CON of 13/787,638 03/06/2013 PAT 9790025
which claims benefit of 61/609,233 03/09/2012

Foreign Applications for which priority is claimed (You may be eligible to benefit from the **Patent Prosecution Highway** program at the USPTO. Please see <http://www.uspto.gov> for more information.) - None.

Foreign application information must be provided in an Application Data Sheet in order to constitute a claim to foreign priority. See 37 CFR 1.55 and 1.76.

Permission to Access Application via Priority Document Exchange: Yes

Permission to Access Search Results: Yes

Applicant may provide or rescind an authorization for access using Form PTO/SB/39 or Form PTO/SB/69 as appropriate.

If Required, Foreign Filing License Granted: 10/26/2017

The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is **US 15/783,370**

Projected Publication Date: 04/05/2018

Non-Publication Request: No

Early Publication Request: No

**** SMALL ENTITY ****

Title

TRASH CAN ASSEMBLY

Preliminary Class

220

Statement under 37 CFR 1.55 or 1.78 for AIA (First Inventor to File) Transition Applications: No

PROTECTING YOUR INVENTION OUTSIDE THE UNITED STATES

Since the rights granted by a U.S. patent extend only throughout the territory of the United States and have no effect in a foreign country, an inventor who wishes patent protection in another country must apply for a patent in a specific country or in regional patent offices. Applicants may wish to consider the filing of an international application under the Patent Cooperation Treaty (PCT). An international (PCT) application generally has the same effect as a regular national patent application in each PCT-member country. The PCT process **simplifies** the filing of patent applications on the same invention in member countries, but **does not result** in a grant of "an international patent" and does not eliminate the need of applicants to file additional documents and fees in countries where patent protection is desired.

Almost every country has its own patent law, and a person desiring a patent in a particular country must make an application for patent in that country in accordance with its particular laws. Since the laws of many countries differ in various respects from the patent law of the United States, applicants are advised to seek guidance from specific foreign countries to ensure that patent rights are not lost prematurely.

Applicants also are advised that in the case of inventions made in the United States, the Director of the USPTO must issue a license before applicants can apply for a patent in a foreign country. The filing of a U.S. patent application serves as a request for a foreign filing license. The application's filing receipt contains further information and guidance as to the status of applicant's license for foreign filing.

Applicants may wish to consult the USPTO booklet, "General Information Concerning Patents" (specifically, the section entitled "Treaties and Foreign Patents") for more information on timeframes and deadlines for filing foreign patent applications. The guide is available either by contacting the USPTO Contact Center at 800-786-9199, or it can be viewed on the USPTO website at <http://www.uspto.gov/web/offices/pac/doc/general/index.html>.

For information on preventing theft of your intellectual property (patents, trademarks and copyrights), you may wish to consult the U.S. Government website, <http://www.stopfakes.gov>. Part of a Department of Commerce initiative, this website includes self-help "toolkits" giving innovators guidance on how to protect intellectual property in specific

countries such as China, Korea and Mexico. For questions regarding patent enforcement issues, applicants may call the U.S. Government hotline at 1-866-999-HALT (1-866-999-4258).

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Title 35, United States Code, Section 184
Title 37, Code of Federal Regulations, 5.11 & 5.15

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APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
15/783,370	10/13/2017	Frank Yang	SHUMAN.122C1

CONFIRMATION NO. 6434

POA ACCEPTANCE LETTER



OC000000096360437

20995
KNOBBE MARTENS OLSON & BEAR LLP
2040 MAIN STREET
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Date Mailed: 12/29/2017

NOTICE OF ACCEPTANCE OF POWER OF ATTORNEY

This is in response to the Power of Attorney filed 12/27/2017.

The Power of Attorney in this application is accepted. Correspondence in this application will be mailed to the above address as provided by 37 CFR 1.33.

Questions about the contents of this notice and the requirements it sets forth should be directed to the Office of Data Management, Application Assistance Unit, at (571) 272-4000 or (571) 272-4200 or 1-888-786-0101.

/ytdemisse/

INFORMATION DISCLOSURE STATEMENT BY APPLICANT	Application No.	15/783,370
	Filing Date	October 13, 2017
	First Named Inventor	Frank Yang
	Art Unit	3781
(Multiple sheets used when necessary)	Examiner	Kevin Charles Castillo
SHEET 1 OF 26	Attorney Docket No.	SHUMAN.122C1

U.S. PATENT DOCUMENTS					
Examiner Initials	Cite No.	Document Number Number - Kind Code (if known) Example: 1,234,567 B1	Publication Date MM-DD-YYYY	Name	Pages, Columns, Lines Where Relevant Passages or Relevant Figures Appear
	1	830,182	09-04-1906	Skov	
	2	1,426,211	08-15-1922	Pausin	
	3	1,461,253	07-10-1923	Owen	
	4	1,754,802	04-15-1930	Raster	
	5	1,820,555	08-25-1931	Buschman	
	6	1,891,651	12-20-1932	Padelford et al.	
	7	1,922,729	08-15-1933	Geibel	
	8	1,980,938	11-13-1934	Geibel	
	9	2,308,326	01-12-1943	Calcagno	
	10	2,457,274	12-28-1948	Rifken	
	11	2,759,625	08-21-1956	Ritter	
	12	2,796,309	06-18-1957	Taylor	
	13	2,888,307	05-26-1959	Graves et al.	
	14	2,946,474	07-26-1960	Knapp	
	15	3,008,604	11-14-1961	Garner	
	16	3,023,922	03-06-1962	Arrington et al.	
	17	3,137,408	06-16-1964	Taylor	
	18	3,300,082	01-24-1967	Patterson	
	19	3,392,825	07-16-1968	Gale et al.	
	20	3,451,453	06-24-1969	Heck	
	21	3,654,534	04-04-1972	Fischer	
	22	3,800,503	04-02-1974	Maki	
	23	3,820,200	06-28-1974	Myers	
	24	3,825,150	07-23-1974	Taylor	
	25	3,825,215	07-23-1974	Borglum	
	26	3,886,425	05-27-1975	Weiss	
	27	3,888,406	06-10-1975	Nippes	
	28	3,891,115	06-24-1975	Ono	
	29	4,014,457	03-29-1977	Hodge	

Examiner Signature	Date Considered
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	Art Unit	3781
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SHEET 2 OF 26	Attorney Docket No.	SHUMAN.122C1

U.S. PATENT DOCUMENTS					
Examiner Initials	Cite No.	Document Number Number - Kind Code (if known) Example: 1,234,567 B1	Publication Date MM-DD-YYYY	Name	Pages, Columns, Lines Where Relevant Passages or Relevant Figures Appear
	30	4,027,774	06-07-1977	Cote	
	31	4,081,105	03-28-1978	Dagonnet et al.	
	32	4,189,808	02-26-1980	Brown	
	33	4,200,197	04-29-1980	Meyer et al.	
	34	4,217,616	08-12-1980	Jessup	
	35	4,303,174	12-01-1981	Anderson	
	36	4,320,851	03-23-1982	Montoya	
	37	4,349,123	09-14-1982	Yang	
	38	4,357,740	11-09-1982	Brown	
	39	4,416,197	11-22-1983	Kehl	
	40	4,417,669	11-29-1983	Knowles et al.	
	41	4,457,483	07-03-1984	Gagne	
	42	4,535,911	08-20-1985	Goulter	
	43	4,570,304	02-18-1986	Montreuil et al.	
	44	4,576,310	03-18-1986	Isgar et al.	
	45	4,609,117	09-02-1986	Pamment	
	46	4,630,332	12-23-1986	Bisbing	
	47	4,630,752	12-23-1986	DeMars	
	48	4,664,347	05-12-1987	Brown et al.	
	49	4,697,312	10-06-1987	Freyer	
	50	4,711,161	12-08-1987	Swin et al.	
	51	4,729,490	03-08-1988	Ziegenbein	
	52	4,753,367	06-28-1988	Miller et al.	
	53	4,763,808	08-16-1988	Guhl et al.	
	54	4,765,548	08-23-1988	Sing	
	55	4,765,579	08-23-1988	Robbins, III et al.	
	56	4,785,964	11-22-1988	Miller et al.	
	57	4,792,039	12-20-1988	Dayton	
	58	4,794,973	01-31-1989	Perisic	

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SHEET 3 OF 26	Attorney Docket No.	SHUMAN.122C1

U.S. PATENT DOCUMENTS					
Examiner Initials	Cite No.	Document Number Number - Kind Code (if known) Example: 1,234,567 B1	Publication Date MM-DD-YYYY	Name	Pages, Columns, Lines Where Relevant Passages or Relevant Figures Appear
	59	4,813,592	03-21-1989	Stolzman	
	60	4,823,979	04-25-1989	Clark, Jr.	
	61	4,834,260	05-30-1989	Auten	
	62	4,863,053	09-05-1989	Oberg	
	63	4,867,339	09-16-1989	Hahn	
	64	4,869,391	09-26-1989	Farrington	
	65	4,884,717	12-05-1989	Bussard et al.	
	66	4,888,532	12-19-1989	Josson	
	67	4,892,223	01-09-1990	DeMent	
	68	4,892,224	01-09-1990	Graham	
	69	4,913,308	04-03-1990	Culbertson	
	70	4,915,347	04-10-1990	Iqbal et al.	
	71	4,918,568	04-17-1990	Stone et al.	
	72	4,923,087	05-08-1990	Burrows	
	73	4,944,419	07-31-1990	Chandler	
	74	4,948,004	08-14-1990	Chich	
	75	4,964,523	10-23-1990	Bieltvedt et al.	
	76	4,972,966	11-27-1990	Craft, Jr.	
	77	4,996,467	02-26-1991	Day	
	78	5,031,793	07-16-1991	Chen et al.	
	79	5,048,903	09-17-1991	Loblein	
	80	5,054,724	10-08-1991	Hutcheson	
	81	5,065,272	11-12-1991	Owen et al.	
	82	5,065,891	11-19-1991	Casey	
	83	5,076,462	12-31-1991	Perrone	
	84	5,090,585	02-25-1992	Power	
	85	5,090,785	02-25-1992	Stamp	
	86	5,100,087	03-21-1992	Ashby	
	87	5,111,958	05-12-1992	Witthoeft	

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SHEET 4 OF 26	Attorney Docket No.	SHUMAN.122C1

U.S. PATENT DOCUMENTS					
Examiner Initials	Cite No.	Document Number Number - Kind Code (if known) Example: 1,234,567 B1	Publication Date MM-DD-YYYY	Name	Pages, Columns, Lines Where Relevant Passages or Relevant Figures Appear
	88	5,147,055	09-15-1992	Samson et al.	
	89	5,156,290	10-20-1992	Rodrigues	
	90	5,170,904	12-15-1992	Neuhaus	
	91	5,174,462	12-29-1992	Hames	
	92	5,213,272	05-25-1993	Gallagher et al.	
	93	5,222,704	06-23-1993	Light	
	94	5,226,558	07-13-1993	Whitney et al.	
	95	5,230,525	07-27-1993	Delmerico et al.	
	96	5,242,074	09-07-1993	Conaway et al.	
	97	5,249,693	10-05-1993	Gillispie et al.	
	98	5,261,553	11-16-1993	Mueller et al.	
	99	5,265,511	11-30-1993	Itzov	
	100	5,295,607	03-22-1994	Chang	
	101	5,305,916	04-26-1994	Suzuki et al.	
	102	5,314,151	05-24-1994	Carter-Mann	
	103	5,322,179	06-21-1994	Ting	
	104	5,329,212	07-12-1994	Feigleson	
	105	5,348,222	09-20-1994	Patey	
	106	5,353,950	10-11-1994	Taylor et al.	
	107	5,372,272	12-13-1994	Jennings	
	108	5,381,588	01-17-1995	Nelson	
	109	5,385,258	01-31-1995	Sutherlin	
	110	5,390,818	02-21-1995	LaBuda	
	111	5,404,621	04-11-1995	Heinke	
	112	5,407,089	04-18-1995	Bird et al.	
	113	5,419,452	05-30-1995	Mueller et al.	
	114	5,471,708	12-05-1995	Lynch	
	115	5,474,201	12-12-1995	Liu	
	116	5,501,358	03-26-1996	Hobday	

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U.S. PATENT DOCUMENTS					
Examiner Initials	Cite No.	Document Number Number - Kind Code (if known) Example: 1,234,567 B1	Publication Date MM-DD-YYYY	Name	Pages, Columns, Lines Where Relevant Passages or Relevant Figures Appear
	117	5,520,067	05-28-1996	Gaba	
	118	5,520,303	05-28-1996	Bernstein et al.	
	119	5,531,348	07-02-1996	Baker et al.	
	120	5,535,913	07-16-1996	Asbach et al.	
	121	5,558,254	09-24-1996	Anderson et al.	
	122	5,560,283	10-01-1996	Hannig	
	123	5,584,412	12-17-1996	Wang	
	124	5,611,507	03-18-1997	Smith	
	125	5,628,424	05-13-1997	Gola	
	126	5,632,401	05-27-1997	Hurd	
	127	5,636,416	06-10-1997	Anderson	
	128	5,636,761	06-10-1997	Diamond et al.	
	129	5,644,111	07-01-1997	Cerny et al.	
	130	5,645,186	07-08-1997	Powers et al.	
	131	5,650,680	07-22-1997	Chula	
	132	5,662,235	09-02-1997	Nieto	
	133	5,671,847	09-30-1997	Pedersen et al.	
	134	5,690,247	11-25-1997	Boover	
	135	5,695,088	12-09-1997	Kasbohm	
	136	5,699,929	12-23-1997	Ouno	
	137	5,704,511	01-06-1998	Kellams	
	138	5,724,837	03-16-1998	Shin	
	139	5,730,312	03-24-1998	Hung	
	140	5,732,845	03-31-1998	Armaly, Jr.	
	141	5,735,495	04-07-1998	Kubota	
	142	5,738,239	04-14-1998	Triglia	
	143	5,770,935	06-23-1998	Smith et al.	
	144	5,799,909	09-01-1998	Ziegler	
	145	5,816,431	10-06-1998	Giannopoulos	

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SHEET 6 OF 26	Attorney Docket No.	SHUMAN.122C1

U.S. PATENT DOCUMENTS					
Examiner Initials	Cite No.	Document Number Number - Kind Code (if known) Example: 1,234,567 B1	Publication Date MM-DD-YYYY	Name	Pages, Columns, Lines Where Relevant Passages or Relevant Figures Appear
	146	5,816,640	10-06-1998	Nishimura	
	147	5,873,643	02-23-1999	Burgess, Jr. et al.	
	148	5,881,896	03-16-1999	Presnell et al.	
	149	5,881,901	03-16-1999	Hampton	
	150	5,884,237	03-16-1999	Kanki et al.	
	151	5,887,748	03-30-1999	Nguyen	
	152	5,961,105	10-05-1999	Ehrnsberger et al.	
	153	5,967,392	10-19-1999	Niemi et al.	
	154	5,987,708	11-23-1999	Newton	
	155	6,000,569	12-14-1999	Liu	
	156	6,010,024	01-04-2000	Wang	
	157	6,024,238	02-15-2000	Jaros	
	158	6,036,050	03-14-2000	Ruane	
	159	6,102,239	08-15-2000	Wien	
	160	6,105,859	08-22-2000	Stafford	
	161	6,123,215	09-26-2000	Windle	
	162	6,126,031	10-03-2000	Reason	
	163	6,129,233	10-10-2000	Schiller	
	164	6,131,861	10-17-2000	Fortier, Jr. et al.	
	165	6,209,744	04-03-2001	Gill	
	166	6,211,637	04-03-2001	Studer	
	167	6,234,339	05-22-2001	Thomas	
	168	6,250,492	06-26-2001	Verbeek	
	169	6,286,706	09-11-2001	Tucker	
	170	6,328,320	12-11-2001	Walski et al.	
	171	6,345,725	02-12-2002	Lin	
	172	6,364,147	04-02-2002	Meinzinger et al.	
	173	6,386,386	05-14-2002	George	
	174	6,390,321	05-21-2002	Wang	

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U.S. PATENT DOCUMENTS					
Examiner Initials	Cite No.	Document Number Number - Kind Code (if known) Example: 1,234,567 B1	Publication Date MM-DD-YYYY	Name	Pages, Columns, Lines Where Relevant Passages or Relevant Figures Appear
	175	6,401,958	06-11-2002	Foss et al.	
	176	6,519,130	02-11-2003	Breslow	
	177	6,557,716	05-06-2003	Chan	
	178	6,596,983	07-22-2003	Brent	
	179	6,626,316 and its entire file history	09-30-2003	Yang	
	180	6,626,317	09-30-2003	Pfiefer et al.	
	181	6,632,064	10-14-2003	Walker et al.	
	182	6,659,407	12-09-2003	Asaro	
	183	6,681,950	01-27-2004	Miller, Jr. et al.	
	184	6,758,366	07-06-2004	Bourgund et al.	
	185	6,812,655	11-02-2004	Wang et al.	
	186	6,814,249	11-09-2004	Lin	
	187	6,837,393	01-04-2005	Kuo	
	188	6,857,538	02-22-2005	Lin	
	189	6,859,005	02-22-2005	Boliver	
	190	6,866,826	03-15-2005	Moore et al.	
	191	6,883,676	04-26-2005	Lin	
	192	6,920,994	07-26-2005	Lin	
	193	6,974,948	12-13-2005	Brent	
	194	6,981,606 and its entire file history	01-03-2006	Yang et al.	
	195	7,017,773	03-28-2006	Gruber et al.	
	196	7,044,323 and its entire file history	05-16-2006	Yang	
	197	7,073,677	07-11-2006	Richardson et al.	
	198	7,077,283 and its entire file history	07-18-2006	Yang et al.	
	199	7,080,750	07-25-2006	Wein et al.	
	200	7,086,550 and its entire file history	08-08-2006	Yang et al.	
	201	7,121,421 and its entire file history	10-17-2006	Yang et al.	
	202	7,163,591	01-16-2007	Kim et al.	

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SHEET 8 OF 26	Attorney Docket No.	SHUMAN.122C1

U.S. PATENT DOCUMENTS					
Examiner Initials	Cite No.	Document Number Number - Kind Code (if known) Example: 1,234,567 B1	Publication Date MM-DD-YYYY	Name	Pages, Columns, Lines Where Relevant Passages or Relevant Figures Appear
	203	7,168,591	01-30-2007	Miller	
	204	7,225,943 and its entire file history	06-05-2007	Yang et al.	
	205	7,243,811	07-17-2007	Ramsey	
	206	7,328,842	02-12-2008	Wagner et al.	
	207	7,374,060 and its entire file history	05-20-2008	Yang et al.	
	208	7,395,990	07-08-2008	Stevens	
	209	7,398,913	07-15-2008	McClure	
	210	7,404,499	07-29-2008	Ramsey	
	211	7,438,199	10-21-2008	Tidrick	
	212	7,494,021 and its entire file history (Atty Docket No. SHUMAN.020A)	02-24-2009	Yang et al.	
	213	7,530,578	05-12-2009	Niemeyer et al.	
	214	7,540,396 and its entire file history	06-02-2009	Yang et al.	
	215	7,543,716	06-09-2009	Lin	
	216	7,559,433 and its entire file history	07-14-2009	Yang et al.	
	217	7,607,552	10-27-2009	Efstathiou	
	218	7,614,519	11-10-2009	Krauth et al.	
	219	7,621,420	11-24-2009	Bandoh et al.	
	220	7,656,109 and its entire file history (Atty Docket No. SHUMAN.021CP1)	02-02-2010	Yang et al.	
	221	7,694,838 and its entire file history (Atty Docket No. SHUMAN.080A)	04-13-2010	Yang et al.	
	222	7,703,622	04-27-2010	Bynoe	
	223	7,712,285	05-11-2010	Stravitz et al.	
	224	7,741,801	06-22-2010	Fukuizumi	
	225	7,748,556 and its entire file history (Atty Docket No. SHUMAN.059CP1C1)	07-06-2010	Yang et al.	
	226	7,781,995 and its entire file history (Atty Docket No. SHUMAN.021CP2)	08-24-2010	Yang et al.	

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	Art Unit	3781
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U.S. PATENT DOCUMENTS					
Examiner Initials	Cite No.	Document Number Number - Kind Code (if known) Example: 1,234,567 B1	Publication Date MM-DD-YYYY	Name	Pages, Columns, Lines Where Relevant Passages or Relevant Figures Appear
	227	7,806,285 and its entire file history	10-05-2010	Yang et al.	
	228	7,896,187	03-01-2011	Haibel	
	229	7,922,024 and its entire file history (Atty Docket No. SHUMAN.020CP1)	04-12-2011	Yang et al.	
	230	7,950,543 and its entire file history (Atty Docket No. SHUMAN.083A)	05-31-2011	Yang et al.	
	231	7,992,742	08-09-2011	Kim	
	232	8,006,857	08-30-2011	Lin	
	233	8,074,833 and its entire file history	12-13-2011	Yang et al.	
	234	8,096,445 and its entire file history (Atty Docket No. SHUMAN.042CP2)	01-17-2012	Yang et al.	
	235	8,136,688	03-20-2012	Lee et al.	
	236	8,297,470 and its entire file history (Atty Docket No. SHUMAN.170C1)	10-30-2012	Yang et al.	
	237	8,317,055	11-27-2012	Zawrotny et al.	
	238	8,418,869 and its entire file history (Atty Docket No. SHUMAN.049A)	04-16-2013	Yang et al.	
	239	8,567,630 and its entire file history (Atty Docket No. SHUMAN.049C1)	10-29-2013	Yang et al.	
	240	8,569,980 and its entire file history (Atty Docket No. SHUMAN.061A)	10-29-2013	Yang et al.	
	241	8,575,537	11-05-2013	Yao et al.	
	242	8,672,171	03-18-2014	Wynn et al.	
	243	8,678,219	03-25-2014	Wang et al.	
	244	8,686,676 and its entire file history (Atty Docket No. SHUMAN.100A2)	04-01-2014	Yang et al.	
	245	8,716,969 and its entire file history (Atty Docket No. SHUMAN.100A3)	05-06-2014	Yang et al.	
	246	8,720,728 and its entire file history (Atty Docket No. SHUMAN.066A)	05-13-2014	Yang et al.	

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	247	8,766,582 and its entire file history (Atty Docket No. SHUMAN.100A)	07-01-2014	Yang et al.	
	248	8,807,378	08-19-2014	Kaberna	
	249	8,807,379	08-19-2014	Hammond	
	250	8,851,316	10-07-2014	Barrett et al.	
	251	8,872,459 and its entire file history (Atty Docket No. SHUMAN.128A)	10-28-2014	Yang et al.	
	252	9,051,093 and its entire file history (Atty. Docket No. SHUMAN.135A)	06-09-2015	Yang et al.	
	253	9,434,538 and its entire file history (Atty. Docket No. SHUMAN.107A)	09-06-2016	Yang et al.	
	254	9,481,515 and its entire file history (Atty. Docket No. SHUMAN.123A)	11-01-2016	Yang et al.	
	255	9,573,759 and its entire file history (Atty. Docket No. SHUMAN.066C1)	02-21-2017	Yang et al.	
	256	9,586,755 and its entire file history (Atty. Docket No. SHUMAN.192A)	03-07-2017	Yang et al.	
	257	9,751,692 and its entire file history (Atty. Docket No. SHUMAN.142A)	09-05-2017	Yang et al.	
	258	9,790,025 and its entire file history (Atty. Docket No. SHUMAN.122A)	10-17-2017	Yang et al.	
	259	9,856,080 and its entire file history (Atty. Docket No. SHUMAN.192P1)	01-02-2018	Yang et al.	
	260	D148,825	02-24-1948	Snider	
	261	D284,320	06-17-1986	Kubic et al.	
	262	D308,272	05-29-1990	Koepsell	
	263	D323,573	01-28-1992	Schneider	
	264	D327,760	07-07-1992	Donnelly	
	265	D329,929	09-29-1992	Knoedler et al.	
	266	D331,097	11-17-1992	Sieren	
	267	D335,562	05-11-1993	Evans	

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	268	D337,181	07-06-1993	Warman	
	269	D340,333	10-12-1993	Duran et al.	
	270	D377,554	01-21-1997	Adriaansen	
	271	D383,277	09-02-1997	Peters	
	272	D388,922	01-06-1998	Peters	
	273	D389,631	01-20-1998	Peters	
	274	D401,383	11-17-1998	Gish	
	275	D401,719	11-24-1998	Van Leeuwen et al.	
	276	D412,552	08-03-1999	Burrows	
	277	D431,700	10-03-2000	Roudebush	
	278	D435,951 and its entire file history	01-02-2001	Yang et al.	
	279	D445,980	07-31-2001	Tjugum	
	280	D476,456	06-24-2003	Englert et al.	
	281	D481,846	11-04-2003	Lin	
	282	D482,169	11-11-2003	Lin	
	283	D488,604 and its entire file history	04-13-2004	Yang et al.	
	284	D488,903 and its entire file history	04-20-2004	Yang et al.	
	285	D489,503	05-04-2004	Lin	
	286	D489,857 and its entire file history	05-11-2004	Yang et al.	
	287	D490,583 and its entire file history	05-25-2004	Yang et al.	
	288	D490,954	06-01-2004	Brand	
	289	D491,706 and its entire file history	06-15-2004	Yang et al.	
	290	D493,930	08-03-2004	Wang	
	291	D494,723	08-17-2004	Lin	
	292	D499,450	12-07-2004	Goodman et al.	
	293	D503,021 and its entire file history	03-15-2005	Yang et al.	
	294	D507,090 and its entire file history	07-05-2005	Yang et al.	

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	295	D513,445	01-03-2006	Lin	
	296	D517,764	03-21-2006	Wang	
	297	D517,767 and its entire file history	03-21-2006	Yang et al.	
	298	D518,266 and its entire file history	03-28-2006	Yang et al.	
	299	D525,756 and its entire file history	07-25-2006	Yang et al.	
	300	D528,726	09-19-2006	Lin	
	301	D531,499	11-07-2006	Zaidman	
	302	D535,799	01-23-2007	Epps	
	303	D535,800 and its entire file history	01-23-2007	Yang et al.	
	304	D537,223	02-20-2007	Lin	
	305	D537,599	02-27-2007	Lin	
	306	D537,601	02-27-2007	Lin	
	307	D537,999	03-06-2007	Lin	
	308	D538,995	03-20-2007	Lin	
	309	D539,498 and its entire file history	03-27-2007	Yang et al.	
	310	D539,499 and its entire file history	03-27-2007	Yang et al.	
	311	D540,001	04-03-2007	Zimmerman	
	312	D542,001 and its entire file history	05-01-2007	Yang et al.	
	313	D542,995	05-15-2007	Lin	
	314	D543,673 and its entire file history	05-29-2007	Yang et al.	
	315	D544,170	06-05-2007	Lin	
	316	D544,171	06-05-2007	Lin	
	317	D544,671	06-12-2007	Saunders et al.	
	318	D545,024	06-19-2007	Liao	
	319	D547,020	07-17-2007	Chen	
	320	D550,918	09-11-2007	Wang et al.	
	321	D552,319	10-02-2007	Gusdorf	

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T¹ - Place a check mark in this area when an English language translation is attached

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	322	D552,321 and its entire file history	10-02-2007	Yang et al.	
	323	D552,823 and its entire file history (Atty Docket No. SHUMAN.029DA)	10-09-2007	Yang et al.	
	324	D552,824	10-09-2007	Zimmerman	
	325	D552,825 and its entire file history (Atty Docket No. SHUMAN.030DA)	10-09-2007	Yang et al.	
	326	D555,320 and its entire file history	11-13-2007	Yang et al.	
	327	D559,494 and its entire file history (Atty Docket No. SHUMAN.035DA)	01-08-2008	Yang et al.	
	328	D559,495 and its entire file history	01-08-2008	Yang et al.	
	329	D562,522	02-19-2008	Daams	
	330	D564,169	03-11-2008	Wang	
	331	D564,723 and its entire file history	03-18-2008	Yang et al.	
	332	D566,367	04-08-2008	Lin	
	333	D566,369	04-08-2008	Shek	
	334	D566,923	04-15-2008	Lin	
	335	D567,468 and its entire file history	04-22-2008	Yang et al.	
	336	D568,572 and its entire file history	05-06-2008	Yang et al.	
	337	D569,720	05-27-2008	Lablaine	
	338	D571,520	06-17-2008	Lin	
	339	D574,569 and its entire file history	08-05-2008	Yang et al.	
	340	D576,371	09-02-2008	Zimmerman	
	341	D578,265	10-07-2008	Presnell	
	342	D578,266 and its entire file history (Atty Docket No. SHUMAN.047DA)	10-07-2008	Yang et al.	
	343	D578,268 and its entire file history	10-07-2008	Yang et al.	
	344	D578,722 and its entire file history	10-14-2008	Yang et al.	

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	345	D580,120	11-04-2008	Lin	
	346	D580,613 and its entire file history	11-11-2008	Yang et al.	
	347	D580,615 and its entire file history	11-11-2008	Yang et al.	
	348	D581,622	11-25-2008	Presnell et al.	
	349	D584,470	01-06-2009	Bizzell et al.	
	350	D585,171	01-20-2009	Bizzell et al.	
	351	D585,618 and its entire file history	01-27-2009	Yang et al.	
	352	D586,070	02-03-2009	Lin	
	353	D587,874	03-03-2009	Lin	
	354	D593,271 and its entire file history	05-26-2009	Yang et al.	
	355	D599,074	08-25-2009	Bizzell et al.	
	356	D603,119 and its entire file history	10-27-2009	Yang et al.	
	357	D604,472	11-17-2009	Blanks et al.	
	358	D611,216 and its entire file history (Atty Docket No. SHUMAN.061DA)	03-02-2010	Yang et al.	
	359	D611,217	03-02-2010	Bizzell et al.	
	360	D611,671 and its entire file history	03-09-2010	Yang et al.	
	361	D615,270 and its entire file history	05-04-2010	Yang et al.	
	362	D615,722 and its entire file history (Atty Docket No. SHUMAN.084DA)	05-11-2010	Yang et al.	
	363	D623,817 and its entire file history	09-14-2010	Yang et al.	
	364	D625,068	10-05-2010	Shannon	
	365	D627,533 and its entire file history	11-16-2010	Yang et al.	
	366	D627,944	11-23-2010	Wang et al.	
	367	D629,172	12-14-2010	Liao	
	368	D630,404 and its entire file history	01-04-2011	Yang et al.	

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	369	D631,221 and its entire file history (Atty Docket No. SHUMAN.159DA)	01-18-2011	Yang et al.	
	370	D632,864 and its entire file history	02-15-2011	Yang et al.	
	371	D634,911 and its entire file history (Atty Docket No. SHUMAN.106DA)	03-22-2011	Yang et al.	
	372	D635,319	03-29-2011	Meyerhoffer	
	373	D644,390	08-30-2011	Smeets et al.	
	374	D644,806 and its entire file history (Atty Docket No. SHUMAN.164DA)	09-06-2011	Yang et al.	
	375	D644,807 and its entire file history (Atty Docket No. SHUMAN.165DA)	09-06-2011	Yang et al.	
	376	D649,728	11-29-2011	Campbell	
	377	D655,061	02-28-2012	Scaturro	
	378	D657,108 and its entire file history (Atty Docket No. SHUMAN.113DA)	04-03-2012	Yang et al.	
	379	D657,109	04-03-2012	Liao	
	380	D672,520 and its entire file history (Atty Docket No. SHUMAN.122DA)	12-11-2012	Yang et al.	
	381	D673,750	01-01-2013	Quan	
	382	D675,802 and its entire file history (Atty Docket No. SHUMAN.124DA)	02-05-2013	Yang et al.	
	383	D675,803 and its entire file history (Atty Docket No. SHUMAN.123DA)	02-05-2013	Yang et al.	
	384	D689,255	09-03-2013	Sun Ting Kung et al.	
	385	D704,406	05-06-2014	Kern	
	386	D714,510 and its entire file history (Atty Docket No. SHUMAN.135DA)	09-30-2014	Yang et al.	
	387	D715,575	10-21-2014	Williams et al.	
	388	D716,015	10-21-2014	van de Leest	
	389	D725,860	03-31-2015	Spivey et al.	

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	390	D725,861 and its entire file history (Atty Docket No. SHUMAN.142DA)	03-31-2015	Yang et al.	
	391	D730,008 and its entire file history (Atty Docket No. SHUMAN.153DA)	05-19-2015	Yang et al.	
	392	D755,461	05-03-2016	Wall	
	393	D759,934 and its entire file history (Atty Docket No. SHUMAN.153DA3)	06-21-2016	Yang et al.	
	394	D762,037	07-19-2016	Chen	
	395	D765,937	09-06-2016	Chen	
	396	D766,998	09-20-2016	Kao et al.	
	397	D771,344 and its entire file history (Atty Docket No. SHUMAN.153DA2)	11-08-2016	Yang et al.	
	398	D773,145 and its entire file history (Atty Docket No. SHUMAN.153DA2D1)	11-29-2016	Yang et al.	
	399	D793,642 and its entire file history (Atty Docket No. SHUMAN.204DA)	08-01-2017	Yang et al.	
	400	D798,016 and its entire file history (Atty Docket No. SHUMAN.202DA)	09-19-2017	Yang et al.	
	401	D804,133 and its entire file history (Atty Docket No. SHUMAN.194DA)	09-28-2017	Yang et al.	
	402	2001/0002690	06-07-2001	Rosky	
	403	2001/0020619	09-13-2001	Pfeifer et al.	
	404	2001/0045512	11-29-2001	Brent	
	405	2002/0066736	06-06-2002	Pyles	
	406	2002/0092853	07-18-2002	Wang	
	407	2002/0096523	07-25-2002	Pyles	
	408	2002/0096524	07-25-2002	Hardesty	
	409	2002/0104266	08-02-2002	Ranaudo	
	410	2002/0116924	08-29-2002	Winkelmann et al.	
	411	2003/0089719	05-15-2003	Berger	

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	412	2003/0102316	06-05-2003	Forest	
	413	2003/0201265	10-30-2003	Lin	
	414	2003/0205979	11-06-2003	Papari et al.	
	415	2003/0230576	12-18-2003	Lin	
	416	2004/0016756	01-29-2004	Lin	
	417	2004/0134924	07-15-2004	Hansen et al.	
	418	2004/0140782	07-22-2004	Okabe et al.	
	419	2004/0164077	08-26-2004	Kuo	
	420	2004/0174268	09-09-2004	Scott et al.	
	421	2004/0175303	09-09-2004	Lin	
	422	2004/0199401	10-07-2004	Wagner	
	423	2004/0200938	10-14-2004	Forlivio	
	424	2004/0206758	10-21-2004	Lin	
	425	2004/0206760	10-21-2004	Gagnebin	
	426	2004/0251746	12-16-2004	Ichimaru et al.	
	427	2005/0017006	01-27-2005	Kuo	
	428	2005/0017010	01-27-2005	Siegel et al.	
	429	2005/0029281	02-10-2005	Westermann et al.	
	430	2005/0129803	06-16-2005	Umeda et al.	
	431	2005/0258177	11-24-2005	Woodson	
	432	2005/0258794	11-24-2005	Fukuizumi	
	433	2006/0027579 and its entire file history	02-09-2006	Yang et al.	
	434	2006/0103086	05-18-2006	Niemeyer et al.	
	435	2006/0138149	06-29-2006	Tracy	
	436	2006/0163257	07-27-2006	Golbert	
	437	2006/0175336	08-10-2006	Wang	
	438	2006/0186121 and its entire file history	08-24-2006	Yang et al.	
	439	2006/0196874 and its entire file history (Atty Docket No. SHUMAN.021A)	09-07-2006	Yang	

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	440	2006/0237641	10-26-2006	Moeller et al.	
	441	2006/0249510	11-09-2006	Lin	
	442	2006/0278643	12-14-2006	Chiou	
	443	2007/0034334	02-15-2007	Ramsey et al.	
	444	2007/0045326	03-01-2007	Tramontina et al.	
	445	2007/0090112	04-26-2007	Kalman et al.	
	446	2007/0012699 and its entire file history	01-18-2007	Yang et al.	
	447	2007/0114847	05-24-2007	Ichimaru et al.	
	448	2007/0181579	08-09-2007	Kuo et al.	
	449	2007/0209846	09-13-2007	Wilson	
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Examiner Signature	Date Considered
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INFORMATION DISCLOSURE STATEMENT BY APPLICANT	Application No.	15/783,370
	Filing Date	October 13, 2017
	First Named Inventor	Frank Yang
	Art Unit	3781
(Multiple sheets used when necessary)	Examiner	Kevin Charles Castillo
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Examiner Initials	Cite No.	Document Number Number - Kind Code (if known) Example: 1,234,567 B1	Publication Date MM-DD-YYYY	Name	Pages, Columns, Lines Where Relevant Passages or Relevant Figures Appear
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	Art Unit	3781
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Examiner Initials	Cite No.	Document Number Number - Kind Code (if known) Example: 1,234,567 B1	Publication Date MM-DD-YYYY	Name	Pages, Columns, Lines Where Relevant Passages or Relevant Figures Appear
	495	2013/0098913 and its entire file history (Attorney Docket No. SHUMAN.169A)	04-25-2013	Yang et al.	
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Examiner Signature	Date Considered
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Examiner Initials	Cite No.	Foreign Patent Document Country Code-Number-Kind Code Example: JP 1234567 A1	Publication Date MM-DD-YYYY	Name	Pages, Columns, Lines Where Relevant Passages or Relevant Figures Appear	T ¹
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	Art Unit	3781
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FOREIGN PATENT DOCUMENTS						
Examiner Initials	Cite No.	Foreign Patent Document Country Code-Number-Kind Code Example: JP 1234567 A1	Publication Date MM-DD-YYYY	Name	Pages, Columns, Lines Where Relevant Passages or Relevant Figures Appear	T ¹
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	First Named Inventor	Frank Yang
	Art Unit	3781
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NON PATENT LITERATURE DOCUMENTS			
Examiner Initials	Cite No.	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T ¹
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Examiner Signature	Date Considered
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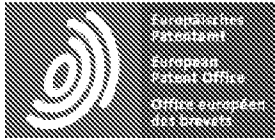
INFORMATION DISCLOSURE STATEMENT BY APPLICANT	Application No.	15/783,370
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NON PATENT LITERATURE DOCUMENTS			
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	644	Search Report for Taiwanese Design Application No. 102302061, dated June 20, 2013, in 1 page (Atty. Docket No. SHUMAN.122XTW)	

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T¹ - Place a check mark in this area when an English language translation is attached.



Patent Translate

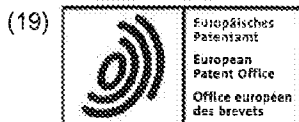
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ABSTRACT EP3042864

The present invention relates to a waste collector comprising a bucket (1) and a cover (4) which covers the bucket and is pivotally mounted in the region of an upper edge of the bucket so as to pivot it upwards for opening the waste collector. Furthermore, the waste collector comprises a pedal arrangement (3, 20) which is arranged in the region of a bottom of the bucket, and a linkage arrangement (8, 12) which connects the pedal arrangement with the cover in order to pivot the cover by a movement of the pedal arrangement. The cover is of multi-part design and has at least two cover sections 5, each of which can be pivoted about its own axis (30, 30'). The cover also comprises a frame member (6) which is detachably and / or pivotably mounted in the region of the upper edge of the bucket and to which the lid sections (5) are pivotally fastened.



(11) **EP 3 042 864 A1**

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Benannte Erstreckungsstaaten:
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(54) **Abfallsammler**

(57) Die vorliegende Erfindung betrifft einen Abfallsammler, umfassend einen Eimer (1) und einen Deckel (4), der den Eimer abdeckt und im Bereich eines oberen Randes des Eimers schwenkbar angebracht ist, um ihn zum Öffnen des Abfallsammlers nach oben aufzuschwenken. Des Weiteren umfasst der Abfallsammler eine Pedalanordnung (3, 20) die im Bereich eines Bodens des Eimers angeordnet ist, sowie eine Gestängeanordnung (8, 12), die die Pedalanordnung mit dem Deckel verbindet, um den Deckel durch eine Bewegung der Pedalanordnung aufzuschwenken. Der Deckel ist mehrteilig ausgebildet und weist mindestens zwei Deckelabschnitte 5 auf, von denen jeder um eine eigene Achse (30, 30') verschwenkbar ist. Der Deckel weist außerdem ein Rahmenelement (6) auf, das abnehmbar und/oder schwenkbar im Bereich des oberen Randes des Eimers angebracht ist, und an dem die Deckelabschnitte (5) schwenkbar befestigt sind.

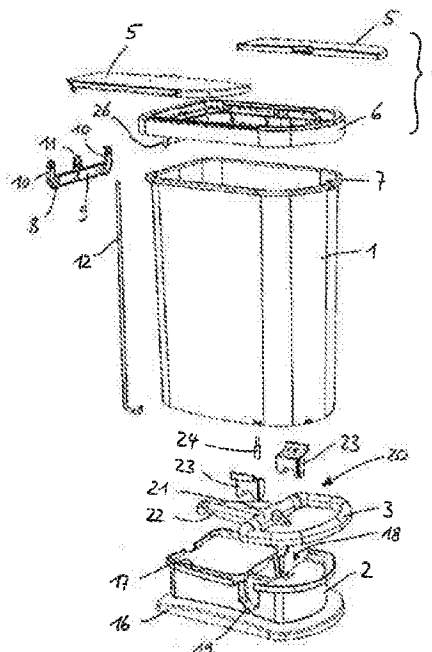


Fig. 5

EP 3 042 864 A1

Beschreibung

[0001] Die vorliegende Erfindung betrifft einen Abfallsammler nach dem Oberbegriff des Patentanspruchs 1. Ein solcher Abfallsammler umfasst einen Eimer und einen Deckel sowie eine Pedalanordnung und eine Gestängeanordnung. Der Deckel deckt den Eimer ab und ist im Bereich eines oberen Randes des Eimers schwenkbar angebracht, um ihn zum Öffnen des Abfallsammlers nach oben aufzuschwenken. Die Pedalanordnung ist im Bereich eines Bodens des Eimers angeordnet und über die Gestängeanordnung mit dem Deckel verbunden, um den Deckel durch eine Bewegung der Pedalanordnung aufzuschwenken.

[0002] Abfallsammler dieser Art sind in vielfachen Ausführungen seit langem bekannt. Durch einen Tritt auf das Pedal wird mittels der Gestängeanordnung der Deckel aufgeschwenkt, um den Abfallsammler zu öffnen. Nach Loslassen des Pedals klappt der Deckel meist aufgrund der Schwerkraft selbsttätig wieder zu, so dass der Eimer des Abfallsammlers, der den Abfall aufnimmt, wieder abgedeckt und der Abfallsammler somit wieder geschlossen ist.

[0003] Üblicherweise weist ein solcher Abfallsammler eine Ummantelung auf, an der die Pedalanordnung, die Gestängeanordnung und der Deckel befestigt sind und die einen separat zu entnehmenden Eimer aufnimmt. Um den gesammelten Abfall zu entsorgen, kann der Eimer somit von der Ummantelung, dem Deckel und insbesondere der Pedalanordnung und der Gestängeanordnung getrennt werden.

[0004] Herkömmliche Abfallsammler mit einem per Pedaldruck aufschwenkbaren Deckel weisen die Problematik auf, dass bei zunehmendem Volumen des Abfallsammlers und dementsprechend zunehmender Deckelfläche der Deckel immer schwerer wird und die Gestängeanordnung entsprechend große Kräfte übertragen muss. Daraus ergeben sich entsprechende Anforderungen an die Stabilität der Pedalanordnung, der Gestängeanordnung und den Lagern für die bewegten Teile derselben.

[0005] Um diese Problematik zu vermeiden, ist es beispielsweise aus der DE 203 05 521 U1 bekannt, einen Abfallsammler der eingangs genannten Art mit einem mehrteiligen Deckel zu versehen, der zwei Deckelabschnitte aufweist, von denen jeder um eine eigene Achse verschwenkbar ist. Die Gestängeanordnung besteht im Wesentlichen aus zwei Schubstangen, die gemeinsam an der Pedalanordnung befestigt sind und mit ihren oberen Enden gelenkig an den Deckelabschnitten angebracht sind, so dass diese beim Betätigen des Pedals nach oben aufschwenken. Hierbei wird jeder Deckelabschnitt um eine eigene Schwenkachse nach oben und zur Seite verschwenkt, um die Öffnung des Eimers freizugeben.

[0006] Die beiden Deckelabschnitte des Abfallsammlers nach diesem Stand der Technik sind schwenkbar am oberen Rand einer Ummantelung angebracht, die die

Gestängeanordnung und einen separat entnehmbaren Eimer sowie die Pedalanordnung aufnimmt. Bei vollständig geöffneten Deckelabschnitten kann der separate Eimer entnommen werden, um den gesammelten Abfall zu entsorgen. Da es hierbei notwendig ist, die beiden Deckelabschnitte um mindestens 90° zu verschwenken, so dass sie die horizontale Projektionsfläche des Eimers vollständig freigeben, sind innerhalb der Gestängeanordnung Rückholfedern vorgesehen, die dafür sorgen, dass die Deckelabschnitte bei nichtbetätigtem Pedal selbsttätig und unabhängig von der Schwerkraft zuklappen. Diese Rückholbewegung muss durch ein Dämpfungselement gebremst werden, um die zusätzlich zur Schwerkraft wirkenden Federkräfte der Rückholfedern zu dämpfen.

[0007] Aus Gründen der Kosteneffizienz ist es allerdings nicht vorteilhaft, den Abfallsammler doppelwandig auszubilden, also eine Ummantelung vorzusehen, die einen separat entnehmbaren Eimer aufnimmt, zumal gerade bei großvolumigen Abfallsammlern der Eimer vom Benutzer grundsätzlich mit einem Müllbeutel ausgekleidet wird, der zum Entsorgen des gesammelten Abfalls aus dem Eimer entnommen werden kann. Insbesondere bei einer im Rahmen der vorliegenden Erfindung bevorzugten, kostengünstigen Herstellung des Abfallsammlers aus Kunststoff führt die doppelwandige Ausbildung zu signifikant höheren Materialkosten sowie zur Notwendigkeit einer separaten Herstellung der Einzelteile mit entsprechenden Zusatzkosten.

[0008] Der vorliegenden Erfindung liegt daher die Aufgabe zugrunde, einen Abfallsammler der oben genannten Art solcherart weiterzubilden, dass auf einen separat entnehmbaren Eimer verzichtet werden kann.

[0009] Gelöst ist diese Aufgabe durch einen Abfallsammler mit den Merkmalen des Patentanspruchs 1. Bevorzugte Ausgestaltungen und Weiterbildungen des erfindungsgemäßen Abfallsammlers finden sich in den Patentansprüchen 2 bis 15.

[0010] Ein gemäß der vorliegenden Erfindung ausgebildeter Abfallsammler ist demnach mit einem modifizierten Deckel versehen, der neben den mindestens zwei Deckelabschnitten ein Rahmenelement aufweist, das abnehmbar und/oder schwenkbar im Bereich des oberen Randes des Eimers angebracht ist und an dem die Deckelabschnitte schwenkbar befestigt sind.

[0011] Durch diese Modifizierung des Deckels können die Deckelabschnitte vollständig vom oberen Rand des Eimers weggeschwenkt oder entfernt werden, so dass die horizontale Projektionsfläche des Eimers auch dann vollständig freigegeben wird, wenn kein separat entnehmbarer Eimer vorgesehen ist. Gleichwohl ist es im Rahmen der vorliegenden Erfindung möglich, den Abfallsammler mit einem separat entnehmbaren Eimer und einer diesen aufnehmenden Ummantelung zu versehen. In jedem Fall können die Deckelabschnitte mitsamt ihrer Scharniere vom oberen Rand des Eimers weggeschwenkt bzw. entfernt werden, so dass das Hantieren mit einem Müllsack und/oder das Entnehmen eines se-

parat entnehmbaren Eimers nicht behindert wird; selbst dann nicht, wenn die Deckelabschnitte nur etwas weniger als 90 Winkelgrade aufgeschwenkt werden können, so dass die Schwerkraft für ein selbsttätiges Zuklappen der Deckelabschnitte sorgt, ohne dass eine Rückholmechanik erforderlich wäre.

[0012] Vorzugsweise weist die Gestängeanordnung des erfindungsgemäßen Abfallsammlers ein Verteilerelement zum Verteilen einer Bewegung der Pedalanordnung auf die einzelnen Deckelabschnitte auf, wobei das Verteilerelement für jeden Deckelabschnitt einen sich nach oben erstreckenden Tragarm mit einer nach oben offenen Lagerstelle zur Aufnahme eines Abstützelements des Deckelabschnitts aufweist.

[0013] Das Verteilerelement ermöglicht, dass die Gestängeanordnung nicht mit separaten Schubstangen für jeden Deckelabschnitt ausgestattet werden muss, die an der Pedalanordnung angebracht sind und einen entsprechenden Raum benötigen. Solch ein Raum ist normalerweise nur zwischen einem separat entnehmbaren Eimer und einer Ummantelung vorhanden, so dass das Verteilerelement zusätzlich dazu beiträgt, dass der erfindungsgemäße Abfallsammler keinen separat zu entnehmenden Eimer benötigt.

[0014] Die Tragarme des Verteilerelements sind mit nach oben offenen Lagerstellen ausgestattet, um zu ermöglichen, dass die Abstützelemente der Deckelabschnitte, die in den Lagerstellen aufgenommen sind, zusammen mit dem erfindungsgemäßen Rahmenelement nach oben weggehoben oder weggeschwenkt werden können, ohne die Tragarme in eine für diese nicht vorgesehene Bewegung mitnehmen zu müssen. Nach dieser bevorzugten Ausgestaltung der vorliegenden Erfindung sind also die Abstützelemente der Deckelabschnitte und die Tragarme leicht voneinander trennbar, um das Rahmenelement zusammen mit den von diesen getragenen Deckelabschnitten abnehmen bzw. aufschwenken zu können.

[0015] Besonders bevorzugt ist es hierbei, wenn die Lagerstellen der Tragarme und/oder die Abstützelemente der Deckelabschnitte mit Steuerflächen versehen sind, an denen entlang sich die Tragarme und die Abstützelemente relativ zueinander bewegen können. Dies erfolgt beim Verschwenken der Deckelabschnitte, da hier eine Kreisbewegung des Abstützelements mit einer Linearbewegung des Tragarms zusammenfällt. Bei einer gelenkigen Anordnung, wie sie im Stand der Technik üblich ist, müsste der Tragarm nach Art einer Pleuelstange lateral beweglich sein. Die bevorzugte Weiterbildung der vorliegenden Erfindung mit Steuerflächen in den Lagerstellen bzw. an den Abstützelementen ermöglicht demgegenüber die Tagarme starr und lediglich vertikal beweglich auszubilden, was sowohl die Führung der Tragarme, des Verteilerelements und der gesamten Gestängeanordnung vereinfacht, als auch die Verbindung zwischen der Gestängeanordnung und der Pedalanordnung unaufwändiger macht.

[0016] Eine hierbei weiter bevorzugte Ausgestaltung

des erfindungsgemäßen Abfallsammlers besteht in einer derartigen Ausformung mindestens einer der bevorzugt vorhandenen Steuerflächen, dass der zugehörige Deckelabschnitt relativ zu den anderen Deckelabschnitten bzw. relativ zu dem anderen Deckelabschnitt geringfügig zeitlich versetzt aufschwenkt und/oder zuklappt. Dies stellt sicher, dass die Kanten der Deckelabschnitte beim Zuklappen nicht aneinanderstoßen und dass sowohl beim Aufschwenken als auch beim Zuklappen ein leichter Druckausgleich zwischen dem Inneren des Abfallsammlers und der Umgebung erfolgt.

[0017] Wie an sich bekannt, ist es auch im Rahmen der vorliegenden Erfindung zweckmäßig, die Gestängeanordnung und/oder die Pedalanordnung und/oder den Deckel mit einem Dämpferelement zu versehen, um eine Schließbewegung des Deckels bzw. ein Zuklappen der Deckelabschnitte zu dämpfen.

[0018] Besonders bevorzugt besteht der Deckel des erfindungsgemäßen Abfallsammlers im Wesentlichen aus dem Rahmenelement und zwei an diesem schwenkbar angebrachten Deckelabschnitten, wobei das Verteilerelement im Wesentlichen aus einer Querstrebe und zwei von dieser ausgehenden, sich nach oben erstreckenden, mit nach oben offenen Lagerstellen versehenen Tragarmen zum Aufschwenken der Deckelabschnitte gebildet ist. Dies ermöglicht eine konstruktiv besonders einfache, dabei gleichzeitig stabile Konstruktion der Gestängeanordnung.

[0019] Bevorzugt ist hierbei das Verteilerelement in einem hinteren oberen Bereich des Abfallsammlers angeordnet, wobei es über eine zentrale Schubstange mit der Pedalanordnung in Wirkverbindung steht. Diese zentrale Schubstange kann auch an einem Abfallsammler angebracht werden, dessen Eimer gleichzeitig die Außenhülle des Abfallsammlers bildet, der also nicht mit einem separat entnehmbaren Eimer und einer dann entsprechend notwendigen Ummantelung ausgestattet ist, zumal durch diese bevorzugte Ausgestaltung des Verteilerelements und die bevorzugte Loslagerung der Deckelabschnitte auf den Tragarmen sowohl die Schubstange als auch das Verteilerelement nur vertikal beweglich gehalten werden müssen.

[0020] Nach einer weiter bevorzugten Ausbildung der vorliegenden Erfindung ist das Verteilerelement der Gestängeanordnung mit einer Feststelleinrichtung versehen, welche die Tragarme in einer angehobenen Stellung feststellt, um ein Schließen des Abfallbehälters zu verhindern. So können Arbeiten, die ein wiederholtes Einwerfen von Abfall in den Eimer umfassen, wie beispielsweise bei der Zubereitung von Lebensmitteln, bei geöffneten Abfallbehälter durchgeführt werden, ohne dass es nötig wäre, das Pedal permanent betätigt zu halten. Auch das Entnehmen beispielsweise eines im Abfallsammler verwendeten Müllsacks zur Entsorgung des gesammelten Abfalls kann hierdurch vereinfacht werden, wobei allerdings das erfindungsgemäß mögliche Aufschwenken oder Abnehmen des Rahmenelements mitsamt den daran angebrachten Deckelabschnitten die bevorzugte

Vorgehensweise ist, um den Inhalt des Eimers zugänglich zu machen.

[0021] Soweit das Verteilerelement im hinteren oberen Bereich des Abfallsammlers angeordnet ist, ist es bevorzugt, wenn die Feststelleinrichtung ein Griffelement und ein Hakenelement an der Querstrebe des Verteilerelements umfasst, wobei das Hakenelement in ein Gegenlager an einer Rückseite des Abfallsammlers einhängbar und aus diesem aushängbar ist. Das Griffelement ist vorzugsweise zugänglich, sobald die Deckelabschnitte aufgeschwenkt sind, so dass dann das Hakenelement in das Gegenlager eingehängt werden kann, um ein Zuklappen der Deckelabschnitte zu verhindern, indem die Tragarme in ihrer angehobenen Stellung stehen bleiben. Hierbei kann das Hakenelement durch Verkippen des Verteilerelements in das Gegenlager einhängbar und aus diesem aushängbar sein. Soweit der erfindungsgemäße Abfallsammler, wie dies bevorzugt ist, im Wesentlichen aus Kunststoff besteht, ist das Verteilerelement in der Regel geringfügig elastisch verformbar, so dass das Einhängen und Aushängen des Hakenelements sowie insbesondere ein Verkippen des Verteilerelements ohne zusätzlichen konstruktiven Aufwand, alleine durch geringfügiges elastisches Verformen vorgenommen werden kann.

[0022] Um in jedem Fall zu gewährleisten, dass auch vollständig aufgeschwenkte Deckelabschnitte ohne eine Rückholmechanik, alleine aufgrund der Schwerkraft, bei nicht betätigtem Pedal selbsttätig zuklappen, ist es bevorzugt, dass im Bereich der schwenkbaren Lagerung der Deckelabschnitte - am Rahmenelement und/oder an einem oberen Rand des Eimers - federelastische Anschlagenelemente angeordnet sind, um die geöffneten Deckelabschnitte bei nicht betätigtem Pedal wenigstens so weit zu verschwenken, bis sie aufgrund der Schwerkraft selbsttätig zuklappen. Solche federelastischen Anschlagenelemente ermöglichen es dann auch, die Deckelabschnitte um bis zu 90 Winkelgrade oder mehr aufzuschwenken, ohne deswegen eine Rückholmechanik vorsehen zu müssen.

[0023] Wenn der Eimer des erfindungsgemäßen Abfallsammlers, wie dies die vorliegende Erfindung ermöglicht, gleichzeitig die Außenhülle des Abfallsammlers bildet, also keine zusätzliche Ummantelung vorhanden ist, ist der Eimer an seinem oberen Rand vorzugsweise mit einer umlaufenden Auskrugung versehen, und das Rahmenelement ist bevorzugt als Fassungsring ausgebildet, der auf der Auskrugung des Eimers aufliegt. Die Ausbildung des Rahmenelements als Fassungsring sorgt für einen sauberen oberen Abschluss des Eimers und bietet in seinem hinteren Abschnitt Platz für die Anhebemechanik der Deckelabschnitte.

[0024] Die bevorzugt vorhandene zentrale Schubstange, die mit einem aus einer Querstrebe und zwei Tragarmen bestehenden Verteilerelement verbunden ist, verläuft in diesem Fall bevorzugt in einer Nut an einer rückwärtigen Außenseite des Eimers und ist mittels einer Durchführung im Bereich des oberen Randes des Eimers

in das Innere des Eimers geführt, wo die Querstrebe des Verteilerelements an der Schubstange angebracht ist. Diese Anbringung kann solcherart stabil gewählt sein, dass das Verteilerelement indirekt über die Schubstange, die in der Regel aus Metall besteht, an der Durchführung geführt ist und keiner weiteren Führung mehr bedarf. Gleichzeitig ist das Rahmenelement bevorzugt mit einer in das Innere des Eimers hinein reichenden Schürze versehen, die zumindest die Querstrebe des Verteilerelements nach innen abdeckt, so dass die Gestängeanordnung weder für den Bediener sichtbar ist noch Gefahr besteht, dass Abfall, der in den Abfallsammler geworfen wird, mit der Gestängeanordnung in Berührung kommt. Auch ein Kontakt eines in den Eimer eingebrachten Müllsacks mit bewegten Teilen der Gestängeanordnung wird hierdurch ausgeschlossen. Das Rahmenelement ist hierbei mit Öffnungen für die Tragarme des Verteilerelements versehen, so dass diese vom Inneren des Eimers wieder nach außen geführt sind und die Deckelabschnitte kontaktieren können.

[0025] Schließlich ist es im Rahmen der vorliegenden Erfindung bevorzugt, wenn im Bereich des oberen Randes des Eimers im Inneren des Abfallsammlers herausnehmbare Federbügel zum Fixieren eines Müllbeutels eingesetzt sind. Diese können ein Abrutschen des Müllbeutels in das Innere des Eimers hinein auch dann verhindern, wenn der Müllbeutel, wie dies bei relativ großvolumigen Abfallsammlern regelmäßig der Fall ist, mit einem vergleichsweise schweren Inhalt befüllt wird. Die Federbügel können hierbei im oberen Rand des Eimers angebracht sein, insbesondere wenn dieser gleichzeitig die Außenhülle des Abfallsammlers bildet. Sie können jedoch auch außerhalb des Eimers, beispielsweise am oberen Rand einer Ummantelung oder am Rahmenelement angebracht sein.

[0026] Ein Ausführungsbeispiel für einen erfindungsgemäß ausgestalteten Abfallsammler wird im Folgenden anhand der beigefügten Zeichnungen näher beschrieben und erläutert. Es zeigen:

- Figur 1 eine Gesamtansicht eines erfindungsgemäß ausgestalteten Abfallsammlers, in geschlossenem Zustand;
- Figur 2 eine Ansicht wie Figur 1, jedoch mit zur Benutzung geöffnetem Deckel;
- Figur 3 eine Ansicht wie die Figuren 1 und 2, jedoch mit vollständig geöffnetem Deckel;
- Figur 4 eine Ansicht des Abfallsammlers aus Figur 1 von schräg unten;
- Figur 5 eine Explosionsdarstellung des Abfallsammlers aus den vorhergehenden Figuren;
- Figur 6 eine geschnittene Teildarstellung des unteren Bereichs des Abfallsammlers aus den

vorhergehenden Figuren;

Figur 7 eine Detailansicht einer oberen hinteren Ecke des geöffneten Abfallsammlers aus den vorhergehenden Figuren;

Figur 8 eine Detailansicht der anderen oberen hinteren Ecke des Abfallsammlers aus den vorhergehenden Figuren;

Figur 9 das Detail aus Figur 7 im Schnitt;

Figur 10 eine (teilweise) Draufsicht auf den geöffneten Abfallsammler aus den vorhergehenden Figuren.

[0027] Der in den Figuren 1 bis 3 in geschlossenem (Figur 1), geöffnetem (Figur 2) bzw. vollständig geöffnetem (Figur 3) Zustand in einer Gesamtansicht dargestellte Abfallsammler umfasst einen Eimer 1, der gleichzeitig die Außenhülle des Abfallsammlers bildet, ein Basisteil 2 mit einem Pedal 3 sowie einen Deckel 4, der zwei Deckelabschnitte 5 aufweist, die den Eimer 1 abdecken und an einem als Fassungsring ausgebildeten Rahmenelement 6 schwenkbar befestigt sind.

[0028] Figur 1 zeigt den Abfallsammler in vollständig geschlossenem Zustand. Das Rahmenelement 6 liegt auf dem oberen Rand des Eimers 1 auf und die Deckelabschnitte 5 sind geschlossen, so dass diese drei Bauteile, die den Deckel 4 bilden, den Eimer 1 insgesamt vollständig abdecken.

[0029] Durch Betätigen des Pedals 3 werden die Deckelabschnitte 5 aufgeschwenkt, wie dies Figur 2 illustriert. Jeder der beiden Deckelabschnitte 5 ist mit einem eigenen Scharnier schwenkbar am Rahmenelement 6 befestigt, wobei die Schwenkachsen 30, 30', um die die beiden Deckelabschnitte 5 aufgeschwenkt werden, zwar parallel angeordnet, jedoch nicht identisch sind. Jeder der beiden Deckelabschnitte 5 weist eine Fläche auf, die in etwa der halben Deckelfläche entspricht, so dass die Deckelabschnitte 5 entsprechend leicht durch Betätigen des Pedals 3 aufgeschwenkt werden können; wegen der geringen Ausdehnung der Deckelabschnitte ist die Hebelwirkung, welche sowohl die Gewichtskraft als auch den Luftwiderstand der Deckelabschnitte 5 verstärkt, vorteilhaft begrenzt.

[0030] Zusätzlich zur normalen Öffnung des Abfallsammlers per Pedaldruck, wie sie in Figur 2 dargestellt ist, kann der gesamte Deckel 4 vom oberen Rand des Eimers 1 weggeschwenkt werden. Dies verdeutlicht Figur 3: Dort ist das Rahmenelement 6, das im geschlossenen Zustand auf einer umlaufenden Auskragung 7 am oberen Rand des Eimers 1 aufliegt, um ein am oberen hinteren Rand des Eimers 1 angebrachtes Scharnier nach hinten weggeschwenkt. Da die beiden Deckelabschnitte 5 am Rahmenelement 6 befestigt sind, sind diese mitsamt dem Rahmenelement 6 weggeschwenkt, so dass der obere Rand des Eimers 1 vollständig freigege-

ben ist.

[0031] Hierdurch ist auch ein Verteilerelement 8 mit einer Querstrebe 9 und zwei Tragarmen 10 sowie einem Griffelement 11 sichtbar, das auf einer Schubstange 12 sitzt. Dies wird im Folgenden noch näher beschrieben.

[0032] Wie Figur 4 zeigt, ist die Schubstange 12 auf der Rückseite des Eimers 1 in einer Nut 13 an der rückwärtigen Außenseite des Eimers 1 angeordnet und einerseits in einer Führungsklammer 15 am Basisteil 2 sowie andererseits in einer Durchführung 14 im Bereich des oberen Randes des Eimers 1 geführt, so dass sie bei einem Betätigen des Pedals 3, mit dem die Schubstange 12 in Wirkverbindung steht, vertikal bewegt werden kann. Eine vertikale Aufwärtsbewegung führt dazu, dass das auf der Schubstange 12 befestigte Verteilerelement 8 sich nach oben bewegt und die Tragarme 10 nach oben gestoßen werden, um die Deckelabschnitte 5 aufzuschwenken (Figur 3, Figur 2).

[0033] Figur 5 zeigt in einer Explosionsdarstellung die Einzelteile des Abfallsammlers aus den Figuren 1 bis 4, die mit Ausnahme der Schubstange 12 aus spritzgegossenem Kunststoff bestehen. Das Basisteil 2 weist unterseits ein Fußelement 16 und oberseits Rastelemente 17 für den Eimer 1 auf. In einer Ausnehmung 18 befinden sich Lagersitze 19 für das Pedal 3, das Teil einer Pedalwippe 20 ist. Die Pedalwippe 20 besteht aus einer Achse 21, dem Pedal 3 und einem Betätigungshebel 22, in den die Schubstange 12 eingesetzt wird. Die gesamte Pedalwippe 20 besteht aus einem einteilig gegossenen Spritzgussteil. Zwei Lagerhaabschalen 23 vervollständigen zusammen mit dem Lagersitz 19 das Lager für die Pedalwippe 20. Ein Dämpferelement 24 wirkt auf die Pedalwippe 20 ein, wie später näher erläutert wird.

[0034] An der Oberseite des Eimers 1 befinden sich das Verteilerelement 8, das Rahmenelement 6 und die beiden Deckelabschnitte 5. Das Verteilerelement 8 sitzt im montierten Zustand auf der Schubstange 12 und sorgt mittels der beiden Tragarme 10 dafür, dass bei einer Betätigung des Pedals 3, die zu einer Aufwärtsbewegung des Betätigungshebels 22 der Pedalwippe 20 und somit zu einer Aufwärtsbewegung der Schubstange 12 führt, die Deckelabschnitte 5, die schwenkbar im Rahmenelement 6 sitzen, nach oben aufgeschwenkt werden. Die Abwärtsbewegung der Schubstange 12 wird durch das Dämpferelement 24, das auf die Pedalwippe 20 einwirkt, abgebremst, so dass sich die Deckelabschnitte 5 gebremst schließen.

[0035] Die Funktionsweise der Pedalwippe 20 wird in der Schnittdarstellung der Figuren 6a und 6b verdeutlicht. Die Pedalwippe 20 mit Pedal 3, Betätigungshebel 22 und Achse 21 ist im Lagersitz 19 des Basisteils 2 und den Lagerhaabschalen 23 drehbar gelagert, so dass eine Abwärtsbewegung des Pedals 3 zu einer Aufwärtsbewegung des Betätigungshebels 22 führt. In diesen ist die Schubstange 12 eingesetzt, so dass im Ergebnis die Schubstange 12 nach oben bewegt wird, wenn das Pedal 3 betätigt, d.h. nach unten bewegt wird. Diesen Zustand zeigt Figur 6a.

[0036] Wenn das Pedal 3 wieder losgelassen wird, sorgt die Gewichtskraft der Schubstange 12 und des Deckels dafür, dass der Betätigungshebel 22 wieder nach unten bewegt wird, so dass das Pedal 3 sich wieder nach oben in die Ausgangsstellung bewegt, die in Figur 6b dargestellt ist. Bei dieser Bewegung läuft eine Nase 25 der Pedalwippe 20 gegen das Dämpferelement 24, das im Basisteil 2 sitzt, wodurch die Abwärtsbewegung des Betätigungshebels 22 und der Schubstange 12 abgebremst wird. Die Deckelabschnitte 5 fallen nach dem Loslassen des Pedals 3 also nicht ungebremst, sondern gedämpft zu.

[0037] Figur 7 zeigt ein Detail des wie in Figur 2 geöffneten Abfallsammlers, um das Zusammenwirken des Verteilerelements 8 mit den Deckelabschnitten 5 näher zu erläutern. Das Verteilerelement 8 sitzt zwar, wie Figur 3 zeigt, im Inneren des Eimers 1, jedoch weist das Rahmenelement 6 eine in das Innere des Eimers 1 hineinreichende Schürze 26 auf, die auch in den Figuren 3 und 5 zu sehen ist, und die das Verteilerelement 8 nach innen abdeckt. Die Tragarme 10 des Verteilerelements 8, von denen hier nur einer dargestellt ist, sind durch Öffnungen 27 durch das Rahmenelement 6 hindurchgeführt, was auch für das Griffelement 11 gilt. So können die Tragarme 10 bei auf die Auskrantung 7 des Eimers 1 aufgesetztem Rahmenelement 6 auf die Deckelabschnitte 5 einwirken.

[0038] Zu diesem Zweck weisen die Deckelabschnitte 5 jeweils ein Abstützelement 28 auf, das auf einer nach oben offenen Lagerstelle 29 des Tragarms 10 aufliegt. Da die Lagerstelle 29 nach oben offen ist, kann das Rahmenelement 6 mitsamt der beiden Deckelabschnitte 5, also der gesamte Deckel 4, nach hinten weggeschwenkt werden (Figur 3), wobei sich die Abstützelemente 28 aus den Lagerstellen 29 herausheben.

[0039] Zum Ausgleich der unterschiedlichen Bewegungswege beim Aufschwenken der Deckelabschnitte 5 - der Tragarm des Verteilerelements 8 bewegt sich linear vertikal, während sich das Abstützelement 28 des Deckelabschnitts 5 in einer Kreisbahn um eine Schwenkachse 30 des Deckelabschnitts 5 bewegt - ist die Lagerstelle 29 breiter ausgebildet als das Abstützelement 28, so dass sich ein Loslager ausbildet, das eine horizontale Relativbewegung zwischen dem Abstützelement 28 und dem Tragarm 10 zulässt.

[0040] Der andere Tragarm 10 des Verteilerelements 8, der in Figur 8 im Detail dargestellt ist, weist eine Steuerfläche 31 auf, die dafür sorgt, dass die Schwenkbewegung des Deckelabschnitts 5 solcherart gesteuert wird, dass er mit einem geringen zeitlichen Versatz bzw. einer verlangsamen Bewegung aufschwenkt und zuklappt, so dass die beiden Deckelabschnitte 5 nicht exakt gleichzeitig aufschwenken und zuklappen, sondern ein geringer Versatz der beiden Bewegungen vorhanden ist, was die Problematik des Luftwiderstands sowohl beim Öffnen als auch beim Schließen des Abfallsammlers optimiert.

[0041] Figur 9 zeigt die Anordnung aus Figur 7 im Schnitt, um die vorhandene Feststellmöglichkeit zu er-

läutern. Mittels des Griffelements 11 des Verteilerelements 8, das durch eine Öffnung 27 im Rahmenelement 6 hindurchgeführt ist und daher trotz der Schürze 26 zugänglich ist, kann das Verteilerelement 8 und mit diesem die in das Verteilerelement 8 eingesetzte Schubstange 12 im angehobenen Zustand festgesetzt werden, so dass die Tragarme 10 angehoben bleiben und die Deckelabschnitte 5 im geöffneten Zustand festgesetzt sind.

[0042] Hierzu ist am Griffelement 11 ein Hakenelement 32 angeformt, das in ein Gegenlager 33 an der Rückseite des Abfallsammlers, das hier an das Rahmenelement 6 angeformt ist, eingehängt werden kann. Figur 9 zeigt eine Situation, in der das Hakenelement 32 das Gegenlager 33 hintergreift und somit das Verteilerelement 8 in der angehobenen Stellung festgesetzt ist. Durch einfaches Anheben des Griffelements 11 kann dieser Eingriff gelöst werden, so dass sich das Verteilerelement 8 und die Schubstange 12 wieder gedämpft nach unten bewegen, wodurch die Deckelabschnitte 5 aufgrund der Schwerkraft zuklappen.

[0043] Wie Figur 10 zeigt, sind am Rahmenelement 6 im Bereich der Scharniere der Deckelabschnitte 5 federelastische Anschlagenelemente 34 angeordnet, die dafür sorgen, dass, wenn die Tragarme 10 abgesenkt werden, die Deckelabschnitte 5 wenigstens so weit nach innen verschwenkt werden, dass sie aufgrund der Schwerkraft selbsttätig zuklappen. Diese Anschlagenelemente 34 ermöglichen, die Deckelabschnitte 5 so weit aufzuschwenken, dass sie nicht alleine aufgrund der Schwerkraft wieder zuklappen würden.

[0044] Wie Figur 10 außerdem verdeutlicht, verfügt das hier dargestellte Darstellungsbeispiel eines erfindungsgemäß ausgebildeten Abfallsammlers schließlich über vier Federbügel 35, mit denen ein (nicht dargestellter) Müllsack im Eimer 1 fixiert werden kann. Diese Federbügel 35 sitzen herausnehmbar in Ausnehmungen 36 im Rahmenelement 6 und können dementsprechend mitsamt dem Deckel 4 bzw. dem Rahmenelement 6 nach hinten verschwenkt werden.

Patentansprüche

1. Abfallsammler, umfassend einen Eimer (1) und einen Deckel (4), der den Eimer (1) abdeckt und im Bereich eines oberen Randes des Eimers (1) schwenkbar angebracht ist, um ihn zum Öffnen des Abfallsammlers nach oben aufzuschwenken, ferner umfassend eine Pedalanordnung (3, 20), die im Bereich eines Bodens des Eimers (1) angeordnet ist, sowie eine Gestängeanordnung (8, 12), die die Pedalanordnung (3, 20) mit dem Deckel (4) verbindet, um den Deckel (4) durch eine Bewegung der Pedalanordnung (3, 20) aufzuschwenken, wobei der Deckel (4) mehrteilig ausgebildet ist und mindestens zwei Deckelabschnitte (5) aufweist, von denen jeder um eine eigene Achse (30, 30') verschwenkbar ist, dadurch gekennzeichnet,

- dass der Deckel (4) außerdem ein Rahmenelement (6) aufweist, das abnehmbar und/oder schwenkbar im Bereich des oberen Randes des Eimers (1) angebracht ist, und an dem die Deckelabschnitte (5) schwenkbar befestigt sind.
2. Abfallsammler nach Anspruch 1,
dadurch gekennzeichnet,
dass die Gestängeanordnung ein Verteilerelement (8) zum Verteilen einer Bewegung der Pedalanordnung (3, 20) auf die einzelnen Deckelabschnitte (5) aufweist, wobei das Verteilerelement (8) für jeden Deckelabschnitt (5) einen sich nach oben erstreckenden Tragarm (10) mit einer nach oben offenen Lagerstelle (29) zur Aufnahme eines Abstützelements (28) des Deckelabschnitts (5) aufweist.
 3. Abfallsammler nach Anspruch 2,
dadurch gekennzeichnet,
dass die Lagerstellen (29) und/oder die Abstützelemente (28) mit Steuerflächen (31) versehen sind, entlang denen sich jeweils ein Tragarm (10) und ein Abstützelement (28) beim Verschwenken des entsprechenden Deckelabschnitts (5) relativ zueinander bewegen.
 4. Abfallsammler nach Anspruch 3,
dadurch gekennzeichnet,
dass mindestens eine Steuerfläche (31) so geformt ist, dass der zugehörige Deckelabschnitt (5) relativ zu den anderen Deckelabschnitten (5) geringfügig zeitlich versetzt aufschwenkt und/oder zuklappt.
 5. Abfallsammler nach mindestens einem der Ansprüche 1 bis 4,
dadurch gekennzeichnet,
dass die Gestängeanordnung (8, 12) und/oder die Pedalanordnung (3, 20) und/oder der Deckel (4) mit einem Dämpferelement (24) versehen sind, um eine Schließbewegung des Deckels (4) und/oder ein Zuklappen der Deckelabschnitte (5) zu dämpfen.
 6. Abfallsammler nach mindestens einem der Ansprüche 2 bis 5,
dadurch gekennzeichnet,
dass der Deckel (4) im Wesentlichen aus dem Rahmenelement (6) und zwei an diesem schwenkbar angebrachten Deckelabschnitten (5) besteht, wobei das Verteilerelement (8) im Wesentlichen aus einer Querstrebe (9) und zwei von dieser ausgehenden, sich nach oben erstreckenden, mit nach oben offenen Lagerstellen (29) versehenen Tragarmen (10) zum Aufschwenken der Deckelabschnitte (5) gebildet ist.
 7. Abfallsammler nach Anspruch 6,
dadurch gekennzeichnet,
dass das Verteilerelement (8) in einem hinteren oberen Bereich des Abfallsammlers angeordnet ist und über eine zentrale Schubstange (12) mit der Pedalanordnung (3, 20) in Wirkverbindung steht.
 8. Abfallsammler nach mindestens einem der Ansprüche 2 bis 7,
dadurch gekennzeichnet,
dass das Verteilerelement (8) mit einer Feststelleinrichtung versehen ist, die die Tragarme (10) in einer angehobenen Stellung feststellt, um ein Schließen des Abfallbehälters zu verhindern.
 9. Abfallsammler nach den Ansprüchen 7 und 8,
dadurch gekennzeichnet,
dass die Feststelleinrichtung ein Griffelement (11) und ein Hakenelement (32) an der Querstrebe (9) umfasst, wobei das Hakenelement (32) in ein Gegenlager (33) an einer Rückseite des Abfallsammlers einhängbar und aus diesem aushängbar ist.
 10. Abfallsammler nach Anspruch 9,
dadurch gekennzeichnet,
dass das Hakenelement (32) durch Verkippen des Verteilerelements (8) in das Gegenlager (33) einhängbar und aus diesem aushängbar ist.
 11. Abfallsammler nach mindestens einem der Ansprüche 1 bis 10,
dadurch gekennzeichnet,
dass im Bereich der schwenkbaren Lagerung der Deckelabschnitte (5) federelastische Anschlagenelemente (34) angeordnet sind, um die geöffneten Deckelabschnitte (5) bei nicht betätigtem Pedal (3) wenigstens so weit zu verschwenken, bis sie aufgrund der Schwerkraft selbsttätig zuklappen.
 12. Abfallsammler nach mindestens einem der Ansprüche 1 bis 11,
dadurch gekennzeichnet,
dass der Eimer (1) gleichzeitig die Außenhülle des Abfallsammlers bildet.
 13. Abfallsammler nach Anspruch 12,
dadurch gekennzeichnet,
dass der Eimer (1) an seinem oberen Rand mit einer umlaufenden Auskragung (7) versehen ist, und dass das Rahmenelement (6) als Fassungsring ausgebildet ist, der auf der Auskragung (7) des Eimers (1) aufliegt.
 14. Abfallsammler nach Anspruch 7 und einem der Ansprüche 12 oder 13,
dadurch gekennzeichnet,
dass die Schubstange (12) im Wesentlichen in einer Nut (13) an einer rückwärtigen Außenseite des Eimers (1) verläuft und mittels einer Durchführung (14) im Bereich des oberen Randes des Eimers (1) in das Innere des Eimers (1) geführt ist, wo die Querstrebe

(9) des Verteilerelements (8) an der Schubstange (12) angebracht ist, dass das Rahmenelement (6) mit einer in das Innere des Eimers (1) hineinreichenden Schürze (26) versehen ist, die zumindest die Querstrebe (9) des Verteilerelements (8) abdeckt, und dass das Rahmenelement (6) Öffnungen (27) für die Tragarme (10) des Verteilerelements (8) aufweist.

15. Abfallsammler nach mindestens einem der Ansprüche 1 bis 14,
dadurch gekennzeichnet,
dass im Bereich des oberen Randes des Eimers (1) herausnehmbare Federbügel (35) zum Fixieren eines Müllbeutels eingesetzt sind.

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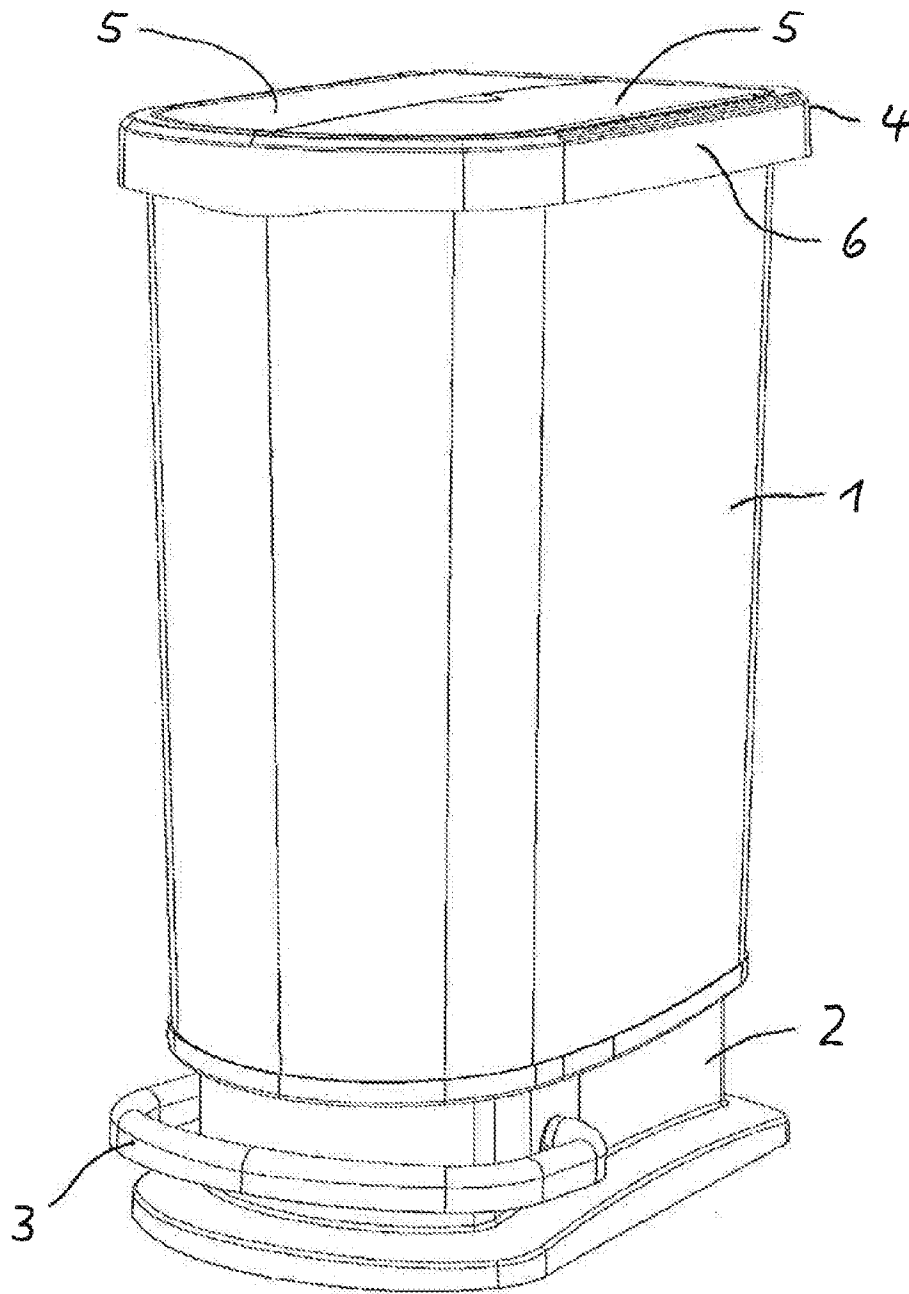


Fig. 1

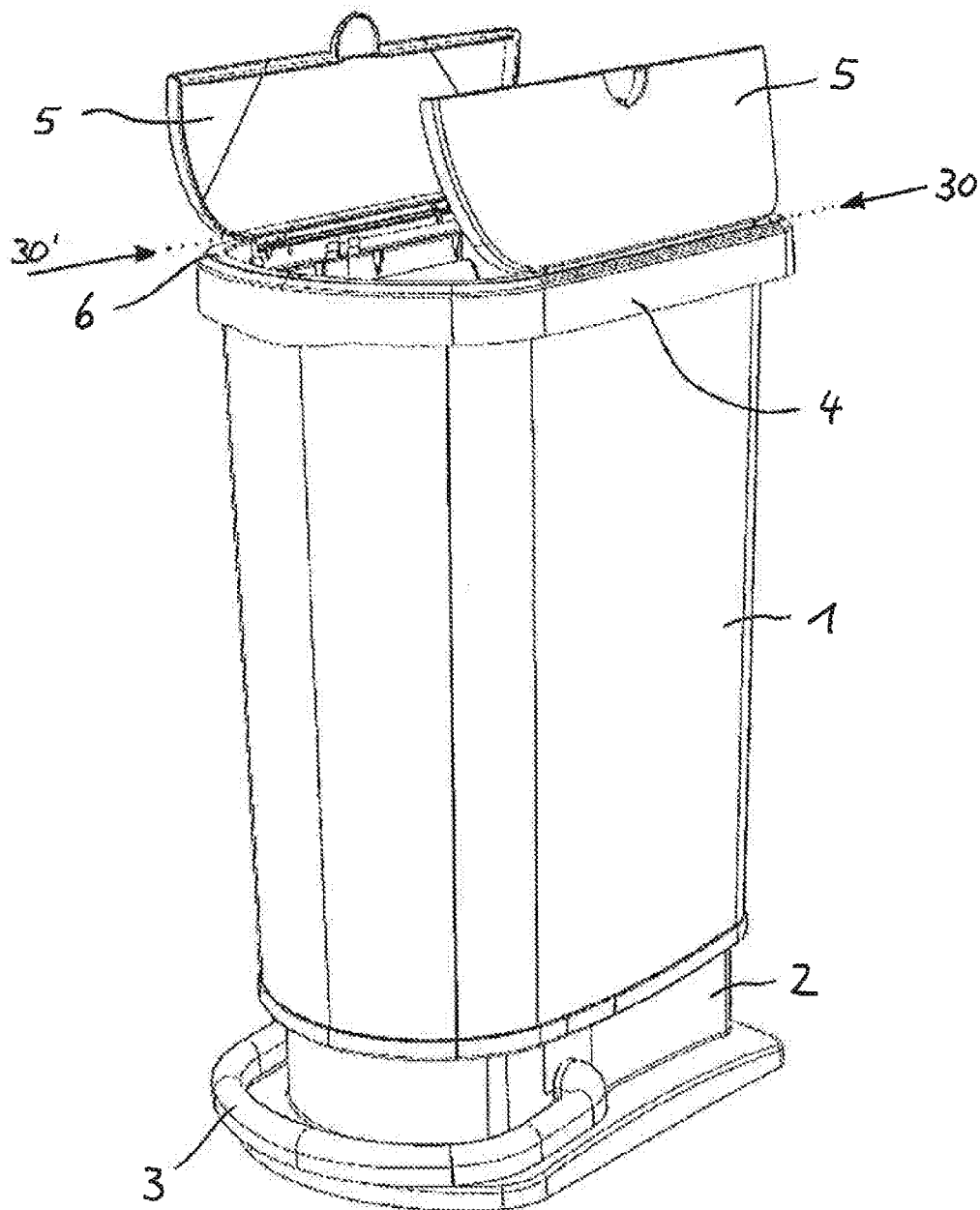


Fig. 2

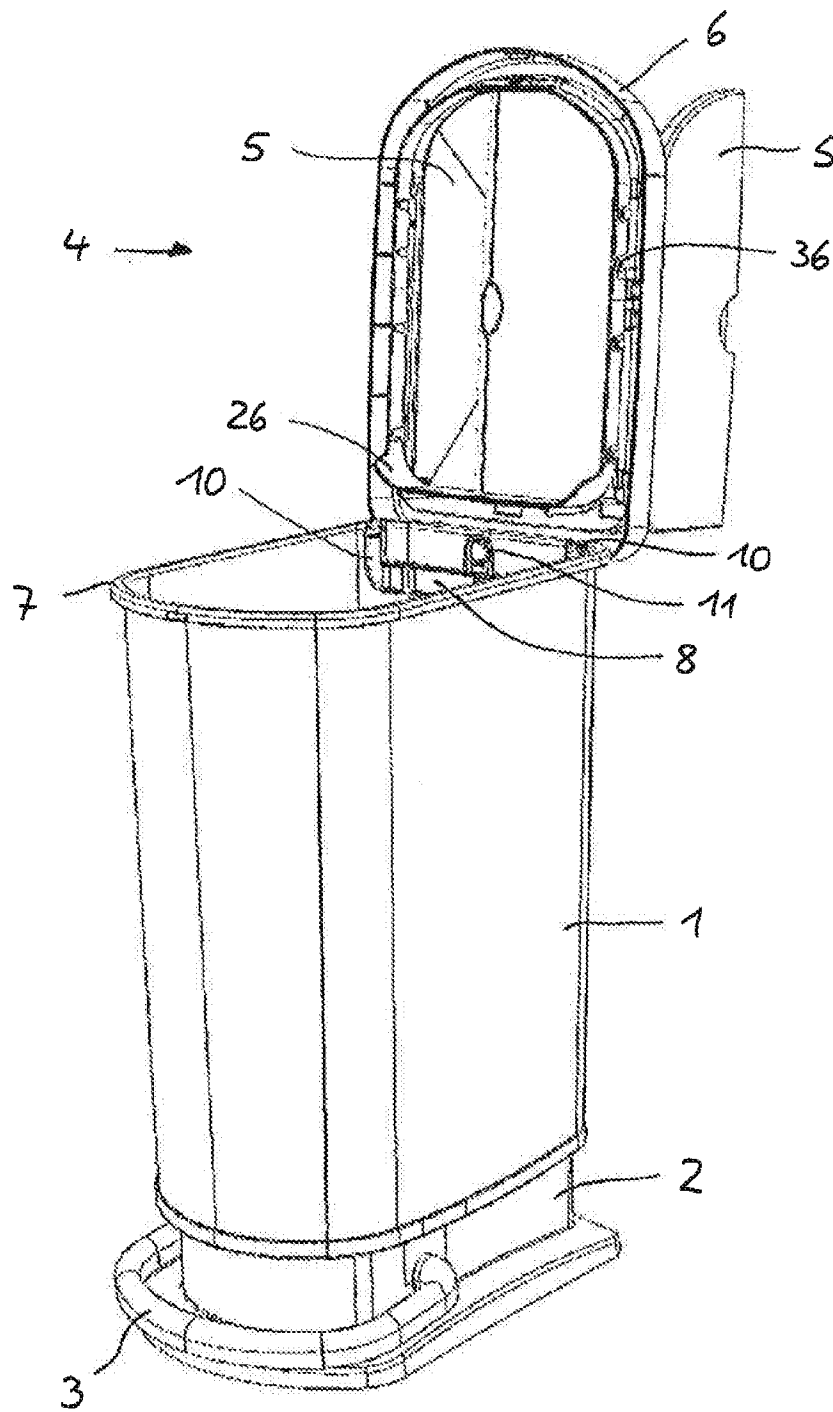


Fig. 3

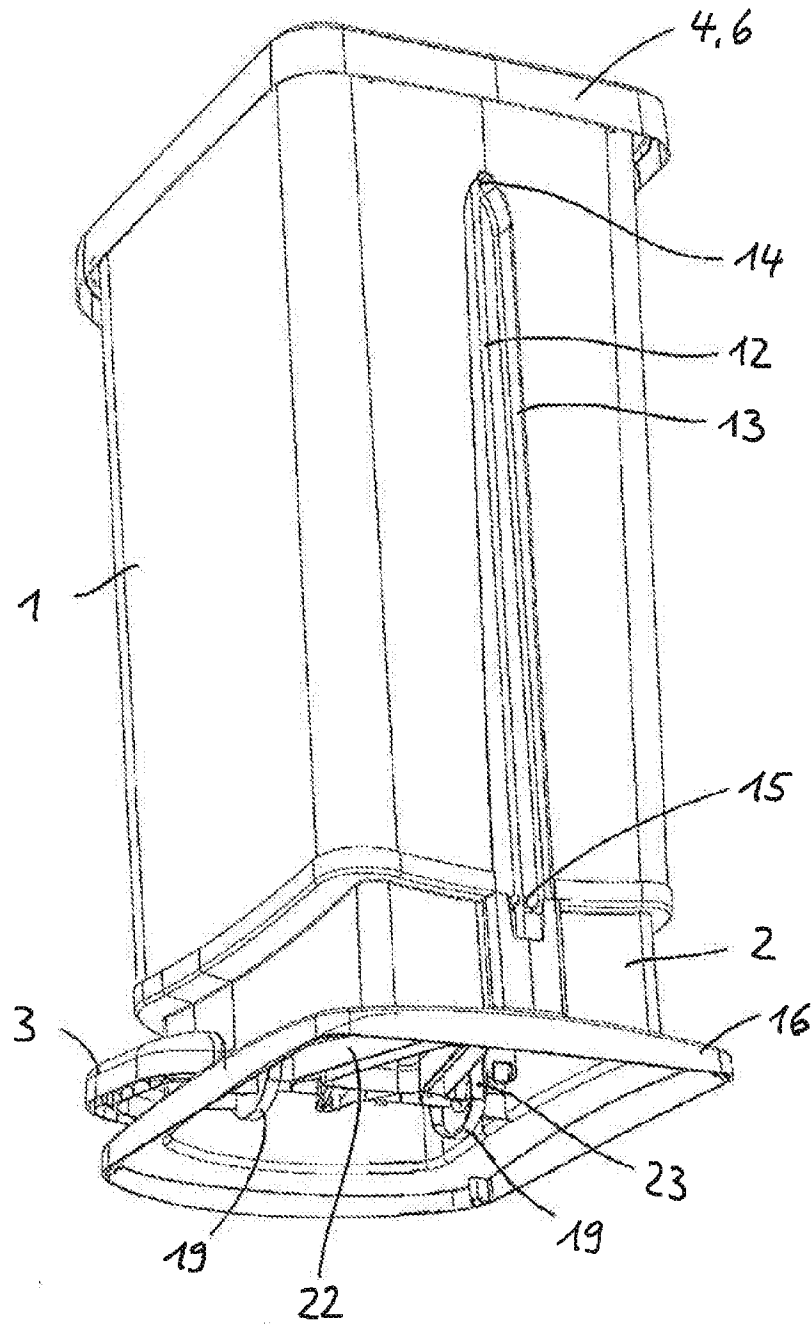


Fig. 4

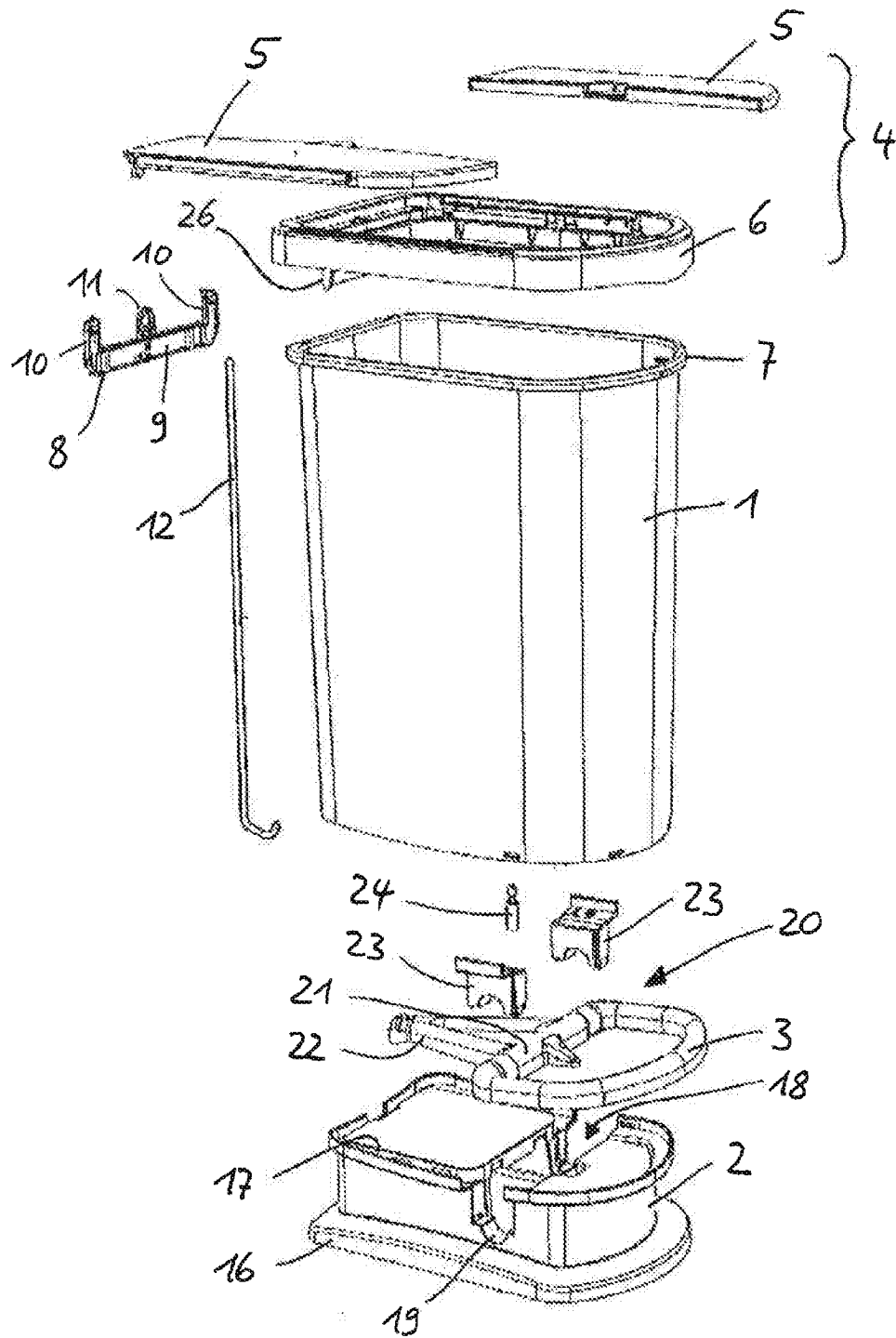


Fig. 5

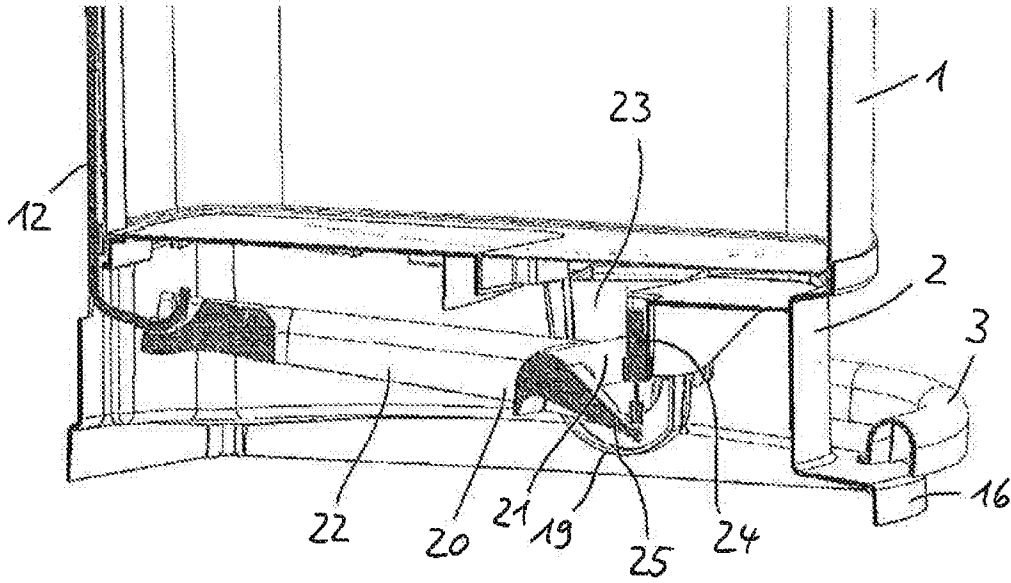


Fig. 6a

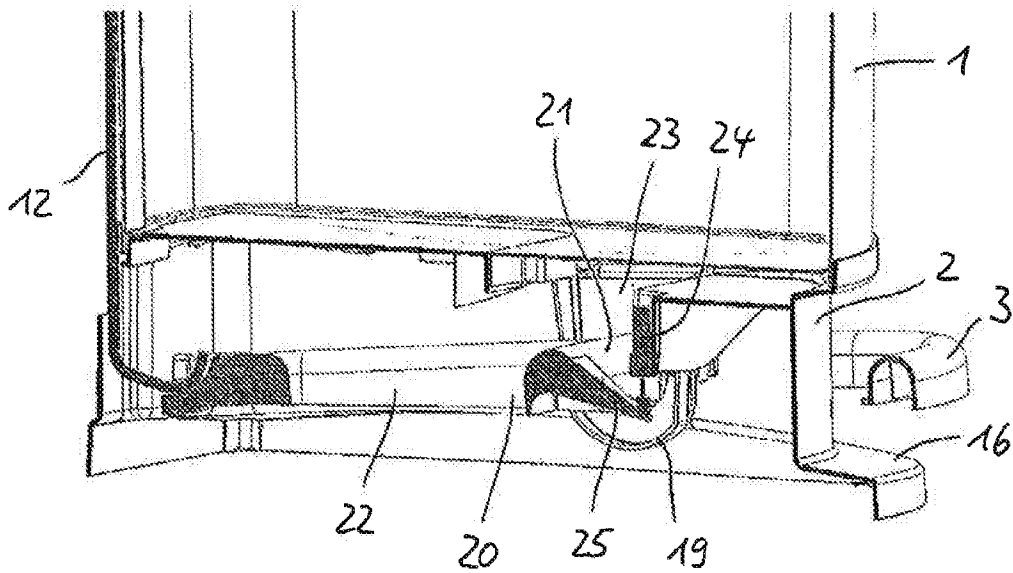


Fig. 6b

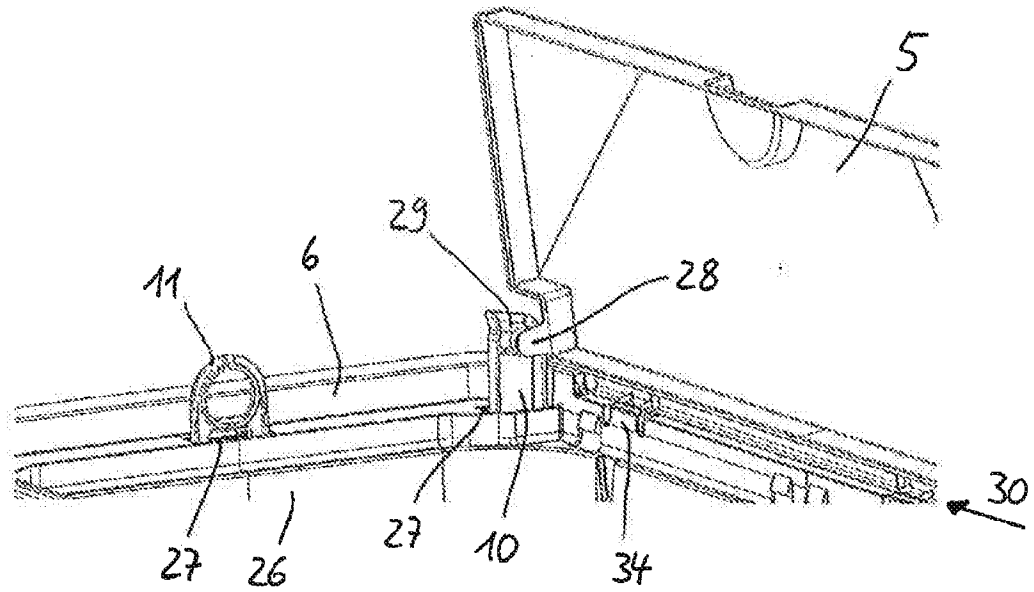


Fig. 7

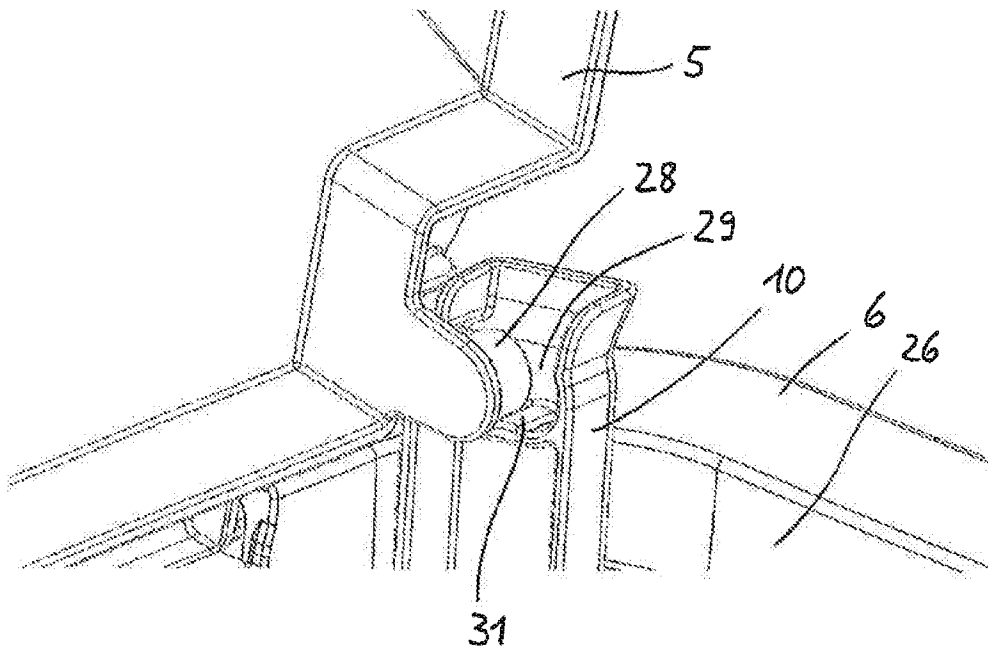


Fig. 8

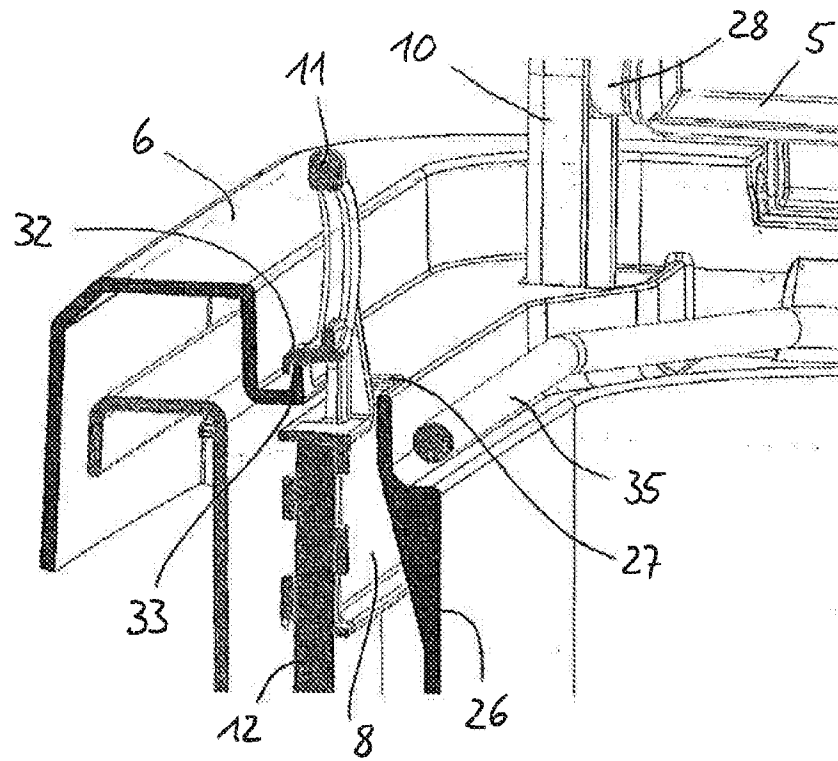


Fig. 9

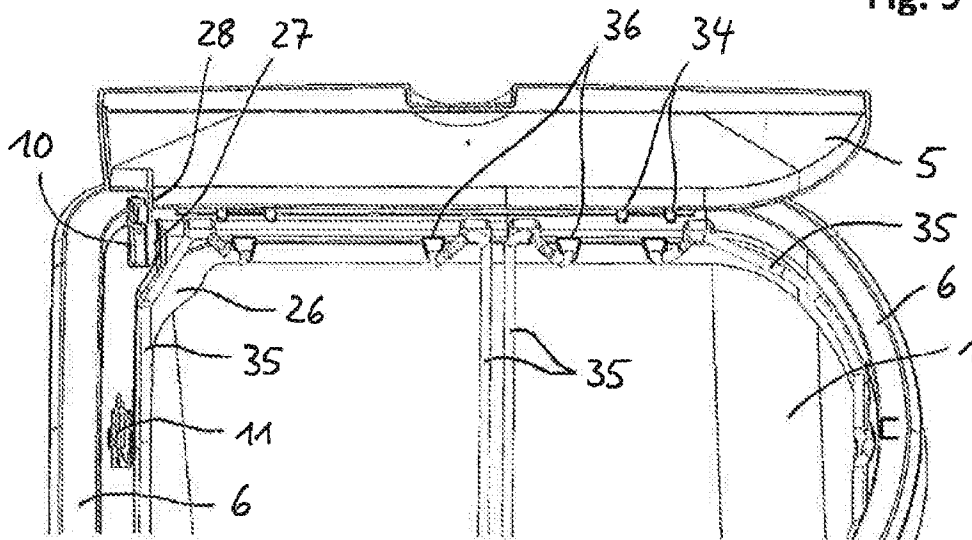


Fig. 10



EUROPÄISCHER RECHERCHENBERICHT

 Nummer der Anmeldung
EP 15 15 0519

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Recherchenort Den Haag		Abschlußdatum der Recherche 7. Juli 2015	Prüfer Pardo Torre, Ignacio
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**ANHANG ZUM EUROPÄISCHEN RECHERCHENBERICHT
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 Diese Angaben dienen nur zur Unterrichtung und erfolgen ohne Gewähr.

07-07-2015

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Für nähere Einzelheiten zu diesem Anhang : siehe Amtsblatt des Europäischen Patentamts, Nr.12/02

IN DER BESCHREIBUNG AUFGEFÜHRTE DOKUMENTE

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In der Beschreibung aufgeführte Patentdokumente

- DE 20305521 U1 [0005]



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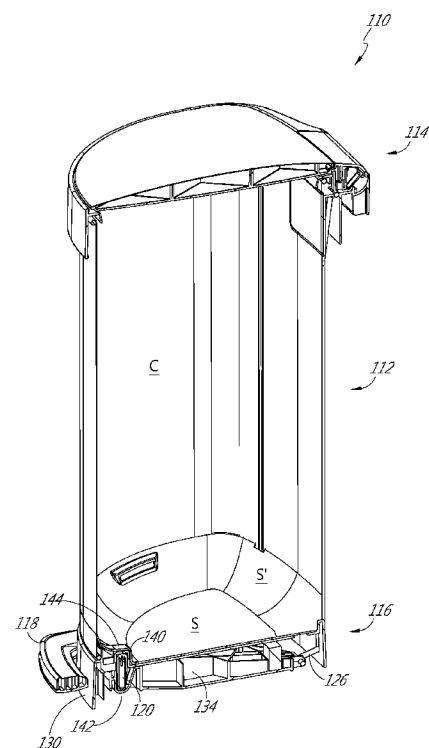
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(54) **RECEPTACLE ASSEMBLY WITH A MOTION DAMPER**

(57) A receptacle assembly (110) comprising a body unit (112) comprising a front wall (F), a rear wall (R), a chamber (C), a lid unit (114) comprising a lid (122) configured to pivot between a closed position and an open position, a base unit (116) comprising a foot pedal (118) operably connected with the lid (122) such that, in response to a user depressing a front of the foot pedal (118), the lid (122) moves from the closed position to the open position, the foot pedal (118) comprising a recess (142), and a motion damper (120) positioned near the front wall (F), the motion damper (120) comprising an end that is received in the recess (142) in the foot pedal (118), the motion damper (120) being configured to dampen movement of the foot pedal (118) and the lid (122).

FIG. 10A



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Description

CROSS REFERENCE

[0001] This application claims the priority benefit under 35 U.S.C. § 119 of U.S. Patent Application No. 62/303,166, filed March 3, 2016, the entirety of which is incorporated by reference herein. This application also incorporates by reference the entirety of U.S. Patent Application No. 29/557,032, filed March 4, 2016.

BACKGROUND

Field

[0002] This disclosure relates to receptacle assemblies with motion dampers, such as trash cans that have a motion damper for slowing a closing motion of a lid.

Description of Certain Related Art

[0003] Trash cans are containers for holding trash and other waste. Some trash cans have a lid to contain the trash and its associated odor. Some trash cans have a foot pedal positioned adjacent a base of the trash can so that a user can step on the foot pedal to open the lid of the trash can.

SUMMARY

[0004] Various embodiments of receptacle assemblies, such as trash cans, are disclosed. In some embodiments, the receptacle assembly includes a body portion and a base unit. The body portion can comprise an interior space. The receptacle assembly can include a lid portion movably engaged with the body portion. The lid portion can be configured to move between an open position and a closed position. The receptacle assembly can include a pedal portion operably connected with the lid such that moving the pedal portion moves the lid portion between the open position and the closed position. For example, a linkage, such as a rod, can operably connect the lid portion and the pedal portion. The receptacle assembly can include a motion damper configured to dampen motion of the pedal portion and/or the lid portion. The motion damper can be positioned near a front of the body portion and/or above a front portion of the pedal portion. The receptacle assembly can include a secondary motion damper, such as a damper positioned in a rear of the receptacle assembly. The secondary motion damper can be configured to dampen movement of the lid, such as during movement from the closed position to the open position and/or from the open position to the closed position.

[0005] For purposes of summarizing the disclosure, certain aspects, advantages and features of the inventions have been described herein. Not necessarily any or all such advantages are achieved in accordance with

any particular embodiment of the inventions disclosed herein. No aspects of this disclosure are essential or indispensable. Neither the preceding summary nor the following detailed description purports to limit or define the scope of protection. The scope of protection is defined by the claims.

BRIEF DESCRIPTION OF THE DRAWINGS

[0006] The abovementioned and other features of the embodiments disclosed herein are described below with reference to the drawings. The drawings show embodiments that are intended to illustrate, but not to limit, the scope of this disclosure. Various features of the different disclosed embodiments can be combined to form further embodiments, which are part of this disclosure.

Figure 1 schematically illustrates an embodiment of a receptacle assembly.

Figure 2 illustrates a front, top, left side perspective view of an embodiment of a receptacle assembly with a lid in a closed position.

Figure 3 illustrates a front, top, left side perspective view of the receptacle assembly of Figure 2 with the lid in an open position.

Figure 4 illustrates a front elevation view of the receptacle assembly of Figure 2.

Figure 5 illustrates a rear elevation view of the receptacle assembly of Figure 2.

Figure 6 illustrates a left-side elevation view of the receptacle assembly of Figure 2, the right side being a mirror image.

Figure 7 illustrates a top plan view of the receptacle assembly of Figure 2.

Figure 8 illustrates a bottom plan view of the receptacle assembly of Figure 2.

Figure 9 illustrates a perspective exploded view of a base unit of the receptacle assembly of Figure 2.

Figures 10A and 10B respectively illustrate perspective and side cross-sectional views of the receptacle assembly of Figure 2.

Figure 10C illustrates a close-up view of a portion of Figure 10B.

Figures 11A and 11B respectively illustrate perspective and side cross-sectional views of the receptacle assembly of Figure 3.

Figure 11C illustrates a close-up view of a portion of Figure 11B.

Figure 12 illustrates a cross-sectional view along the line 12-12 of Figure 5.

Figure 13 illustrates a front, top, left side perspective view of another embodiment of a receptacle assembly with a lid in a closed position.

Figure 14 illustrates a side perspective cross-sectional view of the receptacle assembly of Figure 13.

Figure 15 illustrates a rear perspective cross-sectional view of the receptacle assembly of Figure 13.

Figure 16 schematically illustrates a method of man-

ufacturing a receptacle assembly.

DETAILED DESCRIPTION OF CERTAIN EMBODIMENTS

[0007] Various receptacle assemblies are described. The receptacle assemblies are described in the context of a trash can, due to particular utility in that context. However, the embodiments and inventions disclosed herein can also be applied to other types of devices and other environments, such as recycling bins, diaper pails, medical waste bins, or otherwise. No features, structure, or step disclosed herein is essential or indispensable.

1. OVERVIEW

[0008] Figure 1 schematically illustrates an embodiment of a receptacle assembly 10, such as a trash can. As shown, the receptacle assembly 10 can include a body unit 12, lid unit 14, and base unit 16. The body unit 12 can have a front F and a rear R, such as a front wall and a rear wall. The body unit 12 can include a chamber C for receiving articles, such as trash.

[0009] The lid unit 14 can be coupled with the body unit 12. The lid unit 14 can include a lid that can be moved (e.g., pivoted) relative to the body unit 12 between open and closed positions. In certain embodiments, in the open position, the lid is generally vertical and, in the closed position, the lid is generally horizontal. With the lid in the open position, a user can readily access the chamber C in the body unit 12.

[0010] The base unit 16 can be coupled with the body unit 12. As shown, the base unit 16 can include an actuator, such as a foot pedal 18. The foot pedal 18 can be operably connected with the lid unit 14 such that movement of the foot pedal 18 results in movement of the lid 14. For example, the foot pedal 18 can be operably connected with the lid 14 with a linkage, such as a rod, such that depressing the foot pedal 18 opens the lid 14.

[0011] As also shown, the base unit 16 can include a motion damper 20. The motion damper 20 can be configured to dampen movement of the lid 14 and/or the foot pedal 18. As schematically illustrated, in some embodiments, the motion damper 20 is positioned near (e.g., adjacent) the front F of the body unit 12. As also schematically illustrated, a portion of the motion damper 20 can be higher than the foot pedal 18 and/or a portion of the motion damper 20 can be lower than the chamber C. In certain variants, the motion damper 20 is received at least partly in the foot pedal 18, such as in a recess in the foot pedal 18. In some embodiments, when a user depresses a front portion of the foot pedal 18, the lid 14 opens; and when the user releases the foot pedal 18, the lid 14 closes and the motion damper 20 dampens movement of the foot pedal 18 and/or the lid 14.

[0012] Figures 2-12 illustrate another embodiment of a receptacle assembly 110, which can include any combination of the features of the receptacle assembly 10.

Many of the features of the receptacle assembly 110 are the same as, or similar to, the features described above in connection with the receptacle assembly 10. To illustrate such correspondence, many of the numerals used to identify features of the receptacle assembly 110 are incremented by a factor of one hundred relative to the numerals used in connection with the receptacle assembly 10. This numbering system is used throughout this specification. Any component or step disclosed in any embodiment in this specification can be used in any other embodiment.

[0013] As shown, the receptacle assembly 110 can include a body unit 112, a lid unit 114, and a base unit 116. The base unit 116 can include a foot pedal 118 and a motion damper 120. These and other features are described in more detail below.

2. BODY UNIT

[0014] The body unit 112 can include a front wall F, a rear wall R, and a chamber C that is configured to receive articles, such as trash. In some embodiments, the front and rear walls are connected by sidewalls. For purposes of presentation, the figures show the body unit 112 as having a semi-cylindrical shape (e.g., rounded in front and generally flat in the rear). However, other shapes are also within the scope of this disclosure, such as cylindrical, right rectangular prismatic, rectangular cuboidic, or rectangular parallelepipedic, etc. In certain embodiments, the body unit 112 is formed of metal (e.g., sheet stainless steel, sheet aluminum, etc.), plastic, or other materials. For example, the body unit 112 can comprise a shell formed of stainless sheet, such as 23 to 26 gauge stainless sheet. Further details regarding the body unit 112 and other features can be found in U.S. Patent No. 9,051,093, issued June 9, 2015, the entirety of which is hereby incorporated by reference herein.

[0015] In various embodiments, the body unit 112 has an upper peripheral edge that is configured to engage with a liner, such as a trash bag. For example, some embodiments have a peripheral edge with an outward flange configured to engage with and retain the lip of a trash bag. In certain variants, the peripheral edge comprises a rounded (e.g., rolled-over) metal edge. The trash bag can hang downwardly from the peripheral edge into the chamber C. In some embodiments, the body unit 112 is configured to directly receive the trash bag, without the need for a separate generally rigid liner bucket that fits inside the body unit 112. For example, as described in more detail below, the base unit 116 can have a generally upwardly facing bottom interior surface that can support a bottom of the trash bag.

[0016] Some variants include a generally rigid liner bucket, such as a bucket made from hard plastic. The liner bucket can be received in the chamber C and can include an upper peripheral edge configured to engage with a trash bag. A portion of the trash bag can hang downwardly from the attached upper edge into the liner

bucket. In some variants, the liner bucket is configured to contain leaks and/or spills from the trash bag. For example, in some embodiments, a bottom of the liner bucket has no holes visible to a user.

3. LID UNIT

[0017] The lid unit 114 can include a lid 122 that is moveably coupled with the body unit 112, such as with a hinge. The lid 122 can be configured to pivot relative to the body unit 112. This can enable the lid 122 to rotate into the open position to open the receptacle assembly 110 (e.g., to allow a user to insert trash into a trash bag in the chamber C) and to rotate into the closed position to close the receptacle assembly 110. In various embodiments, in the closed position the lid 122 is at an angle of about 0° (e.g., relative to horizontal) and/or in the open position the lid 122 is at an angle of about 90°. In some embodiments, in the open position, the lid 122 is at an angle of less than 90°, such as less than or equal to about: 65°, 70°, 75°, 80°, 85°, angles between the aforementioned angles, or other angles.

[0018] As shown, the lid unit 114 can include a trim member 124. In some embodiments, the trim member 124 can receive the lid 122 (when in the closed position) and/or can obscure the upper peripheral edge of the body unit 112 (which can be engaged with the trash bag). In some implementations, the trim member 124 is pivotally connected with the rear region R of the body unit 112. For example, the trim member 124 can be pivotally coupled to the rear region R and configured to rotate about a pivot axis in common with the lid 122. The trim member 124 can be made of various materials, such as plastic or metal. The trim member 124 and the body unit 112 can be made from the same or different materials. For example, the trim member 124 and the body unit 112 can comprise a plastic material. In some embodiments, the trim member 124 can engage and/or overlap the upper edge of the body unit 112. Further details regarding the trim member and other features can be found in U.S. Patent Application Publication No. 2013/0233857, filed March 6, 2013, the entirety of which is hereby incorporated by reference herein.

[0019] The lid unit 114 can be connected with a force-communicating linkage, such as a rod 126. As illustrated, the rod 126 can extend from a region at or near the lid unit 114 to a region at or near the foot pedal 118. The rod 126 can include an elongate portion (e.g., a majority of the length of the rod) that is generally parallel to the longitudinal axis of the receptacle assembly 110.

[0020] The rod 126 can include an upper portion interfaced with the lid unit 114 and a lower portion interfaced with the foot pedal 118. For example, the upper portion of the rod 126 can engage with an engagement region (e.g., a slotted receiving structure) of the lid 122 and the lower portion can engage with a rear feature (e.g., an aperture) of the foot pedal 118. As described in more detail below, depressing the front portion of the foot pedal

118 can move the rear portion of the foot pedal 118 upward, which drives the rod 126 upward, which in turn drives the lid 122 toward the open position. Releasing the front portion of the foot pedal 118 allows the rear portion of the foot pedal 118 to move downward, which allows the rod 126 to move downward, which in turn allows the lid 122 to move toward the closed position.

[0021] In various embodiments, the receptacle assembly 110 is configured such that the rod 126 does not occupy space in the chamber C and/or does not engage with a trash bag in the chamber C. For example, as illustrated, the lower portion of the rod 126 can pass through an opening in the base unit 116 and extend upward external to the body unit 112. As further illustrated, in some embodiments, the entire rod 126 that is higher than the base unit 116 is located external to the body unit 112. In some embodiments, the connection between the rod 126 and the lid unit 114 can be positioned in a rear housing 128 and can be external to the chamber C. In various implementations, some or all of the rod 126 is located outside of the chamber C. For example, in some embodiments, no portion of the rod 126, or at least not a majority of the rod 126, is in the chamber C.

4. BASE UNIT

[0022] The receptacle assembly 110 can be configured to rest on the base unit 116. The base unit 116 can be positioned lower than, and configured to support, the body unit 112 and the lid unit 114. The body unit 112 can extend upward from the base unit 116. In some embodiments, the body unit 112 and the base unit 116 are made of different materials, such as the base unit 116 being plastic and the body unit 112 being metal (e.g., stainless steel).

4A. UPPER AND LOWER BASE PORTIONS

[0023] As illustrated in Figure 9, the base unit 116 can include a lower base portion 130 and an upper base portion 132. In some embodiments, the lower base portion 130 and the upper base portion 132 are unitary components (e.g., are integrally formed). In certain variants, the lower base portion 130 and the upper base portion 132 are separate components. The lower base portion 130 and the upper base portion 132 can be connected together, such as with fasteners, mating hooks and slots, or otherwise. The lower base portion 130 can include feet or other features to enable the receptacle assembly 110 to rest stably on a floor or other generally horizontal surface. As described in more detail below, the lower base portion 130 can engage with the foot pedal 118.

[0024] The upper base portion 132 can include a generally upwardly facing surface S, which can form the bottom boundary of the chamber C that can receive a trash bag. As shown, the surface S can be generally concave or generally bowl-shaped. For example, as shown, the surface S can comprise a generally sloped or slanted

region (e.g., positioned generally on or around the periphery) and/or a generally flat or generally planar region (e.g., positioned generally horizontally in a central or inner area). In some embodiments, the surface S is free of moving components (e.g., dampers, foot pedal components, cross bars, linkage rods, etc.) and/or substantial bumps, protrusions, recesses, and/or other features that produce appreciable unevenness.

[0025] The surface S can be configured to support and/or inhibit damage to a trash bag in the chamber C. For example, the surface S can be configured to reduce the chance of snagging, rubbing, and/or pinching the trash bag, which could tear or otherwise harm the trash bag. In some embodiments, the surface S is substantially continuous and/or provides substantially constant support for the bottom of the trash bag from one lateral side of the chamber C to an opposite lateral side of the chamber C. In certain variants, the surface S is generally smooth, generally continuous, and/or generally unobstructed. In some embodiments, the surface S facilitates a generally even distribution of articles (such as trash) inside of the trash bag about the interface between the surface S and the trash bag.

[0026] In certain variants, a rear portion of the surface S comprises a rear corner S. The rear corner S can extend along a rear portion of the chamber C of the receptacle assembly 110. As shown in Figure 9, the rear corner S can be rounded. For example, as shown, the rear corner S can comprise a substantially continuous curve from one lateral side of the chamber C to an opposite lateral side of the chamber C. In some implementations, the rear corner S is generally smooth, generally continuous, and/or generally unobstructed. For example, in some variants, the rear corner S does not include an upward and/or radially inward projection (such as a projection to make room for a damper located below beneath the projection). The lack of such a projection can, for example, provide additional room for the trash bag to expand in the chamber C and/or can reduce the chance of damage to the trash bag.

[0027] In some embodiments, the height of the lower base portion 130 is less or substantially less than the height of the upper base portion 132. In certain variants, the uppermost surface of the lower base portion 130 is closer to the bottom of the receptacle assembly 110 than to the middle and/or top of the receptacle assembly 110. In some embodiments, the height of the lower base portion 130 is less than or equal to about one-fourth of the height of the upper base portion 132. In certain embodiments, the height of the lower base portion 130 is less than or equal to about one-eighth of the height of the upper base portion 132.

4B. FOOT PEDAL

[0028] As previously mentioned, the receptacle assembly can include an actuator, such as a foot pedal 118. In some embodiments, the foot pedal 118 can include a

pedal bar 134 that couples with the lower base portion 130. For example, the pedal bar 134 can be pivotally coupled with the lower base portion 130 such that at least the front portion of the pedal bar 134 can be pivoted relative to the lower base portion 130 (e.g., to enable a user to press on and move the front portion of the pedal). As shown, the pedal bar 134 can extend out from a front region of the lower base portion 130 so as to provide access by a user's hand or foot. For example, the pedal bar 134 can extend through apertures 136 in the lower base portion 130.

[0029] As previously mentioned, the foot pedal 118 can be operatively connected with the lid unit 114 with a linkage, such as the rod 126. When the foot pedal 118 is moved from a resting position to an actuated position, the lid 122 can be moved from the closed position to the open position. As used herein, the term resting position refers to a position in which the foot pedal 118 normally resides when not being actuated by a user, such as when a front portion of the foot pedal 118 is pivoted towards an upper position. As used herein, the term actuated position refers to a position in which the pedal 118 is located during or upon completion of actuation by a user, such as when a front portion of the foot pedal 118 is pressed downward by a user. In various embodiments, in response to the front portion of the foot pedal 118 being depressed, the rear portion of the pedal bar 134 can pivot upward, which can move the rod 126 generally upward, which in turn can drive the lid 122 toward the open position. In various embodiments, in response to the front portion of the foot pedal 118 being released, the weight of the lid unit 114 can encourage the lid 122 to move toward the closed position, which can move the rod generally downward, which in turn can pivot the rear portion of the pedal bar 134 downward and/or the front portion of the pedal bar 134 upward.

[0030] In certain implementations, the lid 122 and/or the foot pedal 118 are biased toward the closed and resting positions, respectively, by way of various devices or configurations. For example, the force of gravity and/or the weight of the lid 122 can encourage the lid 122 toward the closed position, such as when a user has released the pedal 118 or otherwise is applying substantially no downward force on the foot pedal 118. Some embodiments include springs or other force-providing members to bias the lid 122 toward the closed position, and/or the foot pedal 118 to the resting position.

[0031] As shown, the pedal bar 134 can include a movement control element, such as a stop block 138. The stop block 138 can be located on the rear portion of the pedal bar 134. When the foot pedal is depressed, the stop block 138 can engage with (e.g., abut against) the upper base portion 132, which can inhibit or prevent further upward movement of the rear portion of the pedal bar 134. In some embodiments, the movement control element includes a dampening feature, such as a rubber bumper, which can reduce the impact with which the stop block 138 contacts the upper base portion 132 and/or

can reduce the amount of noise created by such impact.

4C. MOTION DAMPER

[0032] As shown in Figures 10A-11C, the base unit 116 can include the motion damper 120. The motion damper 120 can be any type of dampening device, rotary dampening device, friction dampening device, fluid dampening device with liquid or gaseous working fluids (e.g., an air damper), biasing member (e.g., a spring), or otherwise. In some embodiments, the motion damper 120 comprises a linear dampening device, such as a device that extends and contracts along a straight line. In some embodiments, the motion damper 120 comprises a single-directional fluid (e.g., air or hydraulic) damper that is configured to slow down linear movement before reaching a final position and/or to provide a controlled return to a starting position. The motion damper 120 can include a housing with an inner cavity, a piston that reciprocates in the cavity, and a connecting rod coupled with the piston. Fluid pressure in the cavity can inhibit movement of the piston, thereby providing a dampening influence. In certain embodiments, the motion damper 120 comprises a Titus damper, such as Item No. 960-0378, available from TitusPlus or Titus Tool Co. Inc. In some implementations, at a temperature of about 20°C, the motion damper 120 operates with a dynamic force of about 200N $\pm$ 30N and/or a velocity of less than or equal to about 740mm/min. Further details about the motion damper 120 and other features can be found in U.S. Patent No. 8,418,869, issued April 16, 2013, the entirety of which is hereby incorporated by reference herein.

[0033] The motion damper 120 can be configured to dampen and/or regulate the movement of one or more of the components of the receptacle assembly 110. For example, the motion damper 120 can dampen (e.g., slow and/or control) movement of the lid 122 between the open and closed positions, such as from the open position toward the closed position and/or from the closed position toward the open position. In some embodiments, when the lid 122 is in the open position and the user releases the front portion of the foot pedal 118, the weight of the lid 122 and/or the front portion of the foot pedal 118 can encourage the lid unit 114 to move toward the closed position. This can cause the foot pedal 118 to move, which can cause the motion damper's piston to move in the chamber and be inhibited by fluid pressure, thereby causing the foot pedal's movement to be dampened. Such dampening can be transmitted, via the rod 126, from the foot pedal 118 to the lid unit 114. This can provide graceful and controlled movement of the lid 122 and/or can reduce or eliminate an audible noise (e.g., clanging) when the lid 122 closes against the body unit 112.

[0034] In certain embodiments, the motion damper 120 is a one-way damper, which provides dampening in only one direction. For example, in some embodiments, the motion damper 120 provides dampening only during a

closing movement of the lid 122. In certain variants, the motion damper 120 provides dampening only during an opening movement of the lid 122. In some variants, the motion damper 120 is a two-way damper, which provides dampening when the lid 122 is moved from the closed position toward the open position and from the open position toward the closed position. In some implementations, the motion damper 120 is configured to provide more resistance (e.g., dampening force) when the lid 122 is being closed than when the lid 122 is being opened.

[0035] As shown in Figures 10B and 11B, a first (e.g., upper) end of the motion damper 120 can be engaged with the lower or upper base portion 130, 132 and a second (e.g., lower) end of the motion damper 120 can be engaged with the foot pedal 118. For example, the first end of the motion damper 120 can be received in a recess 140 in the lower base portion 130 and the second end of the motion damper 120 can be received in a recess 142 in the foot pedal 118. In some implementations, when the foot pedal 118 is in the resting position, a majority of the motion damper 120 is received in the recess 140 in the lower base portion 130. In certain variants, when the foot pedal 118 is in the resting position, a majority of the motion damper 120 is received in the recess 142 in the foot pedal 118. In some implementations, in a vertical plane intersecting the motion damper 120, lower base portion 130, and foot pedal 118, the motion damper 120 is positioned between the lower base portion 130 and foot pedal 118. For example, the motion damper 120 can be sandwiched by the lower base portion 130 and foot pedal 118.

[0036] As illustrated, the motion damper 120 can be positioned above the foot pedal 118. For example, a lowest portion (e.g., the second end) of the motion damper 120 can be above a portion (e.g., the base of the recess 142) of the foot pedal 118 and/or an upper portion (e.g., the first end) of the motion damper 120 can be positioned below a portion (e.g., the base of the recess 140) of the lower base portion 130. In certain variants, the motion damper 120 does not engage the rod 126, such as via a bracket. In some embodiments, the motion damper 120 directly engages the foot pedal 118. For example, the motion damper 120 can directly dampen movement of the foot pedal 118, rather than dampening movement of the rod to indirectly dampen movement of the foot pedal.

[0037] In some embodiments, the first end of the motion damper 120 remains substantially stationary relative to the lower base portion 130 and the second end of the motion damper 120 is configured to move relative to the foot pedal 118. For example, when the foot pedal 118 is depressed by a user, the second end of the motion damper 120 can slide along a portion of the recess 142 in the foot pedal 118. In certain variants, the second end of the motion damper 120 remains substantially stationary relative to the foot pedal 118 and the first end of the motion damper 120 is configured to move relative to the lower base portion 130. In some embodiments, one or both ends of the motion damper 120, the base of the recess

140, and/or the base of the recess 142 are rounded (e.g., hemispherical). This can facilitate movement of the motion damper 120 relative to the foot pedal 118.

[0038] As shown in Figures 10B and 10C, in some embodiments, when the foot pedal 118 is in the resting position, the motion damper 120 is substantially completely bounded by the foot pedal 118 and the lower base portion 130. For example, the motion damper 120 can be completely or substantially completely enclosed within, surrounded by, and/or encapsulated between the foot pedal 118 and the lower base portion 130. The motion damper 120 being substantially completely bounded can support the motion damper 120, maintain the motion damper 120 in position, protect the motion damper 120 from dirt and damage, and/or aid in hiding the motion damper 120 from view.

[0039] Certain embodiments are configured to compensate for and/or offset the length of the motion damper 120. For example, in some implementations, the sum of the depth of the recess 140, 142 is greater than or equal to the longitudinal length of the housing of the motion damper 120. In some embodiments, the motion damper 120 does not increase the height of the base unit 114 and/or the receptacle assembly 110 overall.

[0040] In some embodiments, the motion damper 120 is positioned between the base of the recess 140 and the base of the recess 142. For example, the motion damper 120 can span the length between such bases. The motion damper 120 can be configured to expand and contract to adjust for movement of the bases. For example, when the front portion of the foot pedal 118 is depressed by a user, the front portion of the foot pedal 118 pivots downward. This can move the front portion of the foot pedal 118 away from the upper base portion 132, which moves the base of the recess 142 away from the base of the recess 140. The motion damper 120 can increase in length a corresponding amount to continue to span between the bases. When the front portion of the foot pedal 118 is released by a user, the front portion of the foot pedal 118 can pivot upward, which moves the front portion of the foot pedal 118 toward the upper base portion 132 and moves the base of the recess 142 toward the base of the recess 140. The motion damper 120 can decrease in length a corresponding amount to continue to span between the bases.

[0041] The motion damper 120 can be located near the front wall F of the receptacle assembly 110. For example, as shown in Figure 10B, the motion damper 120 can be positioned closer to a front wall of the body portion than to a rear wall of the body portion. The motion damper 120 can be positioned adjacent or directly adjacent the front wall of the body portion. In certain embodiments, the motion damper 120 is positioned closer to the frontmost portion of the foot pedal 114 than the rearmost portion of the foot pedal 114. As a function of the front-to-rear width of the body unit 112, the motion damper 120 can be located in the front half, front third, front quarter, front eighth, front sixteenth, or otherwise. In some imple-

mentations, the motion damper 120 is not connected with a rear portion of the receptacle assembly, such as not being fastened to a rear wall of the body unit 112. In certain variants, the motion damper 120 is not located in, and/or does not extend into, the chamber C. In some embodiments, the motion damper 120 is not connected to a top of the base unit 116 and/or is not exposed in the chamber C. In some implementations, the motion damper 120 is located inside the base unit 116 and/or is not positioned on an exterior surface of the receptacle assembly 110.

[0042] The motion damper 120 can be positioned forward of a center of the receptacle assembly 110. As illustrated in Figure 10B, the receptacle assembly 110 can have a longitudinal axis L1 (which is spaced apart from the frontmost portion of the foot pedal 118 by a distance D1) and the motion damper 120 can have a longitudinal axis L2 (which is spaced apart from the frontmost portion of the foot pedal 118 by a distance D2). The distance D1 can be substantially greater than the distance D2. For example, the ratio of D1 to D2 can be at least about: 2.0, 2.25, 2.5, 2.75, 3.0, ratios between the aforementioned ratios, or other ratios. As can be seen in Figure 10B, the longitudinal axis L2 of the motion damper 120 can be generally parallel with the longitudinal axis L1 of the receptacle assembly 110. In some variants, the longitudinal axis L2 is less than or equal to about 5° from exactly parallel with the longitudinal axis L1. As can be seen in Figure 10B, in certain embodiments the distance between the motion damper 120 and the front wall F of the body 112 is less than or equal to the distance from the front of the foot pedal 118 to the front wall F of the body 112. In some embodiments, the distance between the motion damper 120 and the front wall F of the body 112 is less than or equal to the distance from the top of the foot pedal 118 to the bottom of the base unit 116 and/or the amount of travel of the front of the foot pedal 118 between the resting and actuated positions.

[0043] Locating the motion damper 120 near the front F of the receptacle assembly 110 can have certain benefits. For example, compared to some trash cans with dampers located at a rear of the trash can (e.g., on a rear wall of the trash can), locating the motion damper 120 near the front F of the receptacle assembly 110 can increase the length of travel of the motion damper 120 as the lid 122 moves between the open and closed positions. This increase in length can allow the motion damper 120 to counteract the motion of the foot pedal over a longer distance, which can reduce stress on the motion damper 120, can allow the damper to provide an increased dampening force, and/can enable higher resolution of dampening on the foot pedal 118.

[0044] In some embodiments, the motion damper 120 is located in a lateral middle region of the receptacle assembly 110. For example, the motion damper 120 can be located on or near a midpoint of the distance between lateral sidewalls of the body unit 112. As illustrated in Figure 9, the motion damper 120 can be positioned at or

near a lateral middle of the foot pedal 118, such as a lateral middle of a front support section that is contained within the lower base portion 130. This can reduce twisting or rocking of the foot pedal 118 during dampening, facilitate protecting the motion damper 120, or otherwise. As shown, the front support section, or other portions of the foot pedal 118, can include reinforcement members, such as ribs, struts, or otherwise. In some variants, from a top plan view, the reinforcement members form spaces that hexagonal, rectangular, triangular, or another shape. This can reduce the weight of, and/or the amount of material in, the foot pedal 118.

[0045] Certain embodiments are configured to protect, conceal, or obscure the motion damper 120. For example, the motion damper 120 can be positioned entirely inside the base unit 116, which can shield the motion damper 120 and reduce the chance of the motion damper 120 being damaged. As mentioned above, the motion damper 120 can be located under the upper base portion 132 and/or the lower base portion 130. This can protect the motion damper 120 from damage when trash is thrown into a trash bag in the chamber C. In some embodiments, the motion damper 120 is not visible to, and/or accessible by, a user during normal use of the receptacle assembly 110. For example, the motion damper 120 is hidden when the receptacle assembly 110 is viewed from the external front, rear, side, and top (see, e.g., Figures 2-7). In certain embodiments, the motion damper 120 is hidden when a user looks down into the interior of the chamber C (see Figure 12), such as when the user is removing and/or replacing the trash bag. Thus, in some embodiments, the motion damper 120 is hidden both internally and externally.

[0046] As illustrated, some embodiments include a single motion damper 120. Some embodiments include a plurality of motion dampers 120, such as two, three, four, or more. For example, certain variants have a first motion damper on a first lateral side of the foot pedal 118 and a second motion damper on a second lateral side of the foot pedal 118. Certain embodiments have multiple motion dampers positioned within the footprint of the foot pedal 118. For example, a plurality of motion dampers can be located on a front-to-rear centerline of the foot pedal 118.

[0047] As shown in Figure 5, the rear wall of the body unit 112 can be substantially continuous and uninterrupted. For example, in some variants, the rear wall of the body unit 112 does not include an opening that permits access to a motion damper 120 and/or a door that covers a motion damper 120. In some embodiments, the rear wall of the body unit 112 includes a single vertical seam (e.g., a seam from ends of sheet metal used to form the body unit 112), yet the rear wall can still be considered to be substantially continuous and uninterrupted.

[0048] In some embodiments, an upper part of the recess 140 of the lower base portion 130 can be contained in a protrusion, such as an upwardly extending bulge, as shown in Figure 10B. The protrusion and/or the first end

of the motion damper 120, can be received in a compartment 144 in the upper base portion 132. The compartment 144 can be positioned in the front of the upper base portion 132. As shown, the compartment 144 can project slightly upwardly and inwardly into the chamber C. In certain implementations, the rear of the upper base portion 132 that bounds the chamber C does not include an upward and inward projection. In some embodiments, the compartment 144 extends over and/or shields the motion damper 120. This can inhibit damage to the motion damper 120 and/or separate a trash bag in the chamber C from the motion damper 120, such as to inhibit or prevent the trash bag from contacting the motion damper 120.

[0049] As previously mentioned, in some embodiments, the motion damper 120 is received in the recess 140 in the lower base portion 130 and/or the recess 142 in the foot pedal 114. For example, in certain embodiments, the motion damper 120 is secured to the recess with a fastener, adhesive, welding, or otherwise. In some embodiments, the motion damper 120 is received in the recess with an interference fit, which can secure the motion damper 120 in the recess without the need for further securing elements. For example, in certain variants, the motion damper 120 is secured without a fastener, adhesive, or welding. In some implementations, the motion damper 120 is positioned, or secured, without using a bracket.

[0050] Various embodiments of the receptacle assembly 110 can facilitate manufacturability. For example, some embodiments do not include a bracket for mounting the motion damper 120 (e.g., to a rear wall). As illustrated, some embodiments have the motion damper 120 mounted and retained between the lower base portion 130 and the foot pedal 118. Thus, the total number of parts can be reduced (e.g., the bracket itself, fasteners for mounting the bracket to the body unit, and fasteners for mounting the bracket to the motion damper 120 can be eliminated). The reduction in parts can reduce ease manufacturability, such as by reducing the number of steps to assemble the receptacle assembly 110.

5. CERTAIN ADDITIONAL EMBODIMENTS

[0051] Figures 13-15 illustrate another embodiment of a receptacle assembly 210. Many of the features of the receptacle assembly 210 are the same as, or similar to, the features described above in connection with the receptacle assembly 10 and/or the receptacle assembly 110. The receptacle assembly 210 can include one, some, or all of the features of the receptacle assembly 10 and/or the receptacle assembly 110, including all combinations and sub-combinations.

[0052] As illustrated in Figure 13, the receptacle assembly 210 can include a body unit 212, a lid unit 214, and a base unit 216. The lid unit 114 can include a lid 222 that is moveably coupled with the body unit 112, such as with a hinge. This can enable the lid 222 to move

between open and closed positions. As shown, the lid 222 can be elongate in shape, such as being generally obround in shape. In some embodiments, the front-to-rear length of the lid 222 is greater than the lateral width of the lid 222. For example, the length of the lid 222 can be at least about twice the lateral width of the lid 222.

[0053] As shown in Figure 14, the body unit 212 can include a chamber C for receiving articles, such as trash. The base unit 216 can include a foot pedal 218 and a damper 220. The motion damper 220 can be configured to dampen and/or regulate the movement of one or more of the components of the receptacle assembly 210. For example, the motion damper 220 can dampen (e.g., slow and/or control) movement of the lid 222 from the open position toward the closed position and/or from the closed position toward the open position. As shown, the motion damper 220 can extend above the foot pedal 218. The motion damper 220 can be positioned near the front of the body unit 212, similar to the motion damper 120 described above. In some embodiments, the motion damper 220 directly engages the foot pedal 218. For example, the motion damper 120 can directly dampen movement of the foot pedal 218, rather than dampening movement of a rod to indirectly dampen movement of the foot pedal 218.

[0054] As illustrated in Figure 15, the foot pedal 218 can be operably connected with the lid unit 214 via a force-communicating linkage, such as a rod 226. In response to the front of the foot pedal 218 being depressed, the rod 226 is lifted, which causes an upper portion 246 of the rod 226 to press against an engagement portion 248 (e.g., a flange) of the lid 222, which in turn causes the lid 222 to rotate toward the open position. As shown, in some implementations, the upper portion 246 of the rod 226 is generally U shaped.

[0055] In some embodiments, the receptacle assembly 210 includes a secondary dampening feature, such as a secondary motion damper 250. As illustrated in Figure 15, the secondary motion damper 250 can comprise a biasing member, such as a spring (e.g., a helical coil spring). The secondary motion damper 250 can be positioned in a rear housing 228 and/or outside the chamber C. As illustrated, in some embodiments, an upper portion and/or lower portion of the secondary motion damper 250 is engaged with (e.g., abut against) a portion of the rear housing 228. For example, the lower portion (e.g., the bottom) of the secondary motion damper 250 can be secured to a portion of the rear housing 228, such as with an adhesive, fastener, physical interference, or otherwise. In various embodiments, the secondary motion damper 250 is at or near the rear of the assembly 210.

[0056] As shown, the secondary motion damper 250 can be positioned over and/or receive a portion of the rod 226. For example, the secondary motion damper 250 can include a longitudinal interior passage that receives a portion of the rod 226. In some embodiments, the secondary motion damper 250 engages with an engagement feature of the rod 226. For example, the secondary mo-

tion damper 250 can abut against and/or physically interfere with a flange 252 of the rod 226. As shown, in some implementations, the engagement between the secondary motion damper 250 and the flange 252 occurs at a middle portion of the secondary motion damper 250. In some variants, the engagement between the secondary motion damper 250 and the flange 252 occurs at an end of the secondary motion damper 250.

[0057] In certain implementations, when the lid 222 is in the closed position, the secondary motion damper 250 is in an energized (e.g., compressed) state. For example, as shown in Figure 15, the secondary motion damper 250 can be compressed between the rear housing 228 and a portion of the rod 224, such as a bend in the rod. In the energized state, the secondary motion damper 250 can store an amount of energy (e.g., potential energy).

[0058] In some embodiments, when the front of the foot pedal 218 is depressed, the rod 226 is lifted, which releases some of the energy stored in the secondary motion damper 250. For example, in the embodiment of Figure 15, when the front of the foot pedal 218 is depressed, the rod 226 is lifted, the lid 222 opens, and the spring moves from a compressed state to an extended state. This applies a force to the lid 222 (e.g., via the rod 226), which can aid in driving the lid 222 toward the open position. Using the secondary motion damper 250 to apply force to the lid 222 can be particularly useful in helping to open certain types of lids 222, such as lids that are heavy and/or lids 222 that are elongate in shape (e.g., due to the moment caused by the length of the elongate lid 222 from the pivot axis of the lid 222). In various embodiments, the secondary motion damper 250 is configured to assist a user in opening the lid 222, such as by reducing the amount of force that the user needs to apply to the foot pedal 218.

[0059] In several embodiments, when the lid 222 is closing, the secondary motion damper 250 provides dampening, such as by slowing the rate that the lid 222 moves toward the closed position. In some implementations, when the front of the foot pedal 218 is released, the rod 226 moves downward, the lid 222 moves toward the closed position, and the helical coil spring is reenergized (e.g., returns to the compressed state), thereby dampening movement of the lid 222 as it closes.

[0060] In some embodiments, the motion damper 220 and the secondary motion damper 250 work together to dampen movement of the lid 222. For example, in certain variants, the motion damper 220 dampens movement of the lid 222 in a first phase of closing movement (e.g., from less than or equal to about 90° to greater than or equal to about 40°) and the secondary motion damper 250 dampens movement of the lid 222 in a second phase of closing movement (e.g., from less than or equal to about 40° to greater than or equal to about 0°). In various embodiments, the motion damper 220 and the secondary motion damper 250 are different types of dampers, such as one being a fluid damper and the other being a biasing member (e.g., a spring).

[0061] In some embodiments, when the front of the foot pedal 218 is depressed, the rod 226 is lifted, which acts against and/or energizes (e.g., extends or compresses) the secondary motion damper 250. For example, when the front of the foot pedal 218 is depressed, the rod 226 is lifted, the lid 222 opens, and the helical coil spring is extended. This can be, for example, because the lower portion of the helical coil spring is held fixed to the rear housing 228 and the upper portion of the helical coil spring is moved upward due to the engagement with the flange 252 of the rod 226.

[0062] In some variants, the assembly 210 is configured such that the secondary motion damper 250 is compressed when the rod 226 is lifted. For example, the secondary motion damper 250 can be compressed between the rear housing 228 and the upper portion 246 of the rod 226. In certain variants, when the front of the foot pedal 218 is released, the rod 226 moves downward, the lid 222 closes, and the helical coil spring extends.

[0063] As mentioned above, in various embodiments, the secondary motion damper 250 can dampen (e.g., act against) movement of the lid 222 and/or the rod 226. For example, the secondary motion damper 250 can provide dampening during at least some of the movement of the lid 222 between the open and closed positions, such as from the open to the closed position. This can, in some implementations, aid in providing a generally smooth movement of the lid 222 (e.g., a substantially consistent speed during at least part of the travel between the closed and open positions) and/or more controlled movement of the lid 222.

[0064] In certain embodiments, dampening of the lid 222 can be particularly beneficial. For example, in some embodiments with an elongate lid, when the lid 222 is moved from the open toward the closed position, the front of the lid 222 can appear to move with an overly rapid angular velocity (for example, due to the distance between the front of the lid and the pivot axis of the lid). Such overly rapid movement of the lid 222 can be undesirable, since it can be perceived as the lid 222 being uncontrolled, surprising, and/or indicative of a lesser quality product. In some embodiments, such overly rapid movement of the lid 222 can be reduced or avoided by the secondary motion damper 250. For example, as discussed above, the secondary motion damper 250 can dampen movement of the lid 222, which can reduce the angular velocity at which the front of the lid 222 travels.

6. CERTAIN METHODS

[0065] This disclosure includes methods related to receptacle assemblies, such as methods of making and/or using the receptacle assemblies described above. As shown in Figure 16, a method of manufacturing a receptacle assembly 300 includes obtaining portions of the receptacle assembly. For example, the method 300 can include obtaining a body unit 301 and obtaining a lower base portion 303. In some embodiments, the method 300

includes connecting the body unit and the lower base portion. The method 300 can include obtaining a foot pedal 305. Some variants include pivotally connecting the foot pedal to the lower base portion 307.

[0066] In certain implementations, the method 300 includes obtaining a motion damper. As shown, the method 300 can include inserting a first end of the motion damper into a recess in the lower base portion 309, such as a recess in a front portion of the lower base portion. In some embodiments, inserting the first end into the recess in the lower base portion includes inserting the first end upwardly into the recess. The method 300 can include inserting a second end of the motion damper into a recess in the foot pedal 311, such as a recess in a front portion of the foot pedal. In some embodiments, inserting the second end into the recess in the foot pedal includes inserting the second end downwardly into the recess.

[0067] Various embodiments include positioning the damper near a front of the receptacle assembly. For example, some embodiments include inserting the motion damper near (e.g., adjacent) a front of the receptacle assembly, such as a front wall of the body unit. Some embodiments include securing the motion damper to the foot pedal and/or the lower base portion without the use of a fastener, such as a screw or rivet. For example, some embodiments include inserting the motion damper into the recess in the foot pedal and/or the lower base portion with an interference fit. Certain implementations do not include positioning and/or securing the motion damper to a rear portion of the receptacle assembly, such as to a rear wall of the body unit and/or to a rear portion of the lower base portion.

[0068] In some embodiments, the method includes connecting the lower base portion with an upper base portion to form a base unit. In some variants, the method includes receiving a part of the recess of the lower base portion in a compartment in the upper base portion. For example, the recess of the lower base portion can be included in an upward projection in the lower base portion, and the upward projection can be received in the compartment.

[0069] In some embodiments, the receptacle assembly that is the result of the method of manufacturing has a substantially continuous rear wall. For example, certain implementations do not include forming a damper-access hole in a rear wall of the body portion and/or covering the damper-access hole with a cover.

[0070] Some embodiments of the method include installing a secondary motion damper, such as a biasing member (e.g., a spring). For example, the secondary motion damper can be positioned in a rear housing of the receptacle assembly. Certain embodiments include inserting a linkage into the secondary motion damper. Some embodiments include positioning the biasing member around a portion of the linkage. Some variants include engaging a portion (e.g., a flange) of the linkage with the secondary motion damper. Certain embodiments of the method include configuring the receptacle

assembly such that the secondary motion damper dampens movement of the linkage and/or the lid. For example, the secondary motion damper can be configured to be energized by and/or to act against movement of the lid, such as at least during a phase of movement of the lid from the open position toward the closed position. In some implementations, the phase comprises movement of the lid from about an angle of greater than or equal to about 0° through an angle of less than or equal to about 45°. In some implementations, the phase comprises movement of the lid from about an angle of less than or equal to about 90° through an angle of greater than or equal to about 40°.

7. CERTAIN TERMINOLOGY

[0071] Terms of orientation used herein, such as top, bottom, horizontal, vertical, longitudinal, lateral, and end are used in the context of the illustrated embodiment. However, the present disclosure should not be limited to the illustrated orientation. Indeed, other orientations are possible and are within the scope of this disclosure. Terms relating to circular shapes as used herein, such as diameter or radius, should be understood not to require perfect circular structures, but rather should be applied to any suitable structure with a cross-sectional region that can be measured from side-to-side. Terms relating to shapes generally, such as circular or cylindrical or semi-circular or semi-cylindrical or any related or similar terms, are not required to conform strictly to the mathematical definitions of circles or cylinders or other structures, but can encompass structures that are reasonably close approximations.

[0072] Conditional language, such as can, could, might, or may, unless specifically stated otherwise, or otherwise understood within the context as used, is generally intended to convey that certain embodiments include or do not include, certain features, elements, and/or steps. Thus, such conditional language is not generally intended to imply that features, elements, and/or steps are in any way required for one or more embodiments.

[0073] Conjunctive language, such as the phrase at least one of X, Y, and Z, unless specifically stated otherwise, is otherwise understood with the context as used in general to convey that an item, term, etc. may be either X, Y, or Z. Thus, such conjunctive language is not generally intended to imply that certain embodiments require the presence of at least one of X, at least one of Y, and at least one of Z.

[0074] The terms approximately, about, and substantially as used herein represent an amount close to the stated amount that still performs a desired function or achieves a desired result. For example, in some embodiments, as the context may dictate, the terms approximately, about, and substantially may refer to an amount that is within less than or equal to 10% of the stated amount. The term generally as used herein represents a value, amount, or characteristic that predomi-

nantly includes or tends toward a particular value, amount, or characteristic. As an example, in certain embodiments, as the context may dictate, the term generally parallel can refer to something that departs from exactly parallel by less than or equal to 20 degrees.

[0075] Unless otherwise explicitly stated, articles such as a or an should generally be interpreted to include one or more described items. Accordingly, phrases such as a device configured to are intended to include one or more recited devices. Such one or more recited devices can also be collectively configured to carry out the stated recitations. For example, a processor configured to carry out recitations A, B, and C can include a first processor configured to carry out recitation A working in conjunction with a second processor configured to carry out recitations B and C.

[0076] The terms comprising, including, having, and the like are synonymous and are used inclusively, in an open-ended fashion, and do not exclude additional elements, features, acts, operations, and so forth. Likewise, the terms some, certain, and the like are synonymous and are used in an open-ended fashion. Also, the term or is used in its inclusive sense (and not in its exclusive sense) so that when used, for example, to connect a list of elements, the term or means one, some, or all of the elements in the list.

[0077] Overall, the language of the claims is to be interpreted broadly based on the language employed in the claims. The language of the claims is not to be limited to the non-exclusive embodiments and examples that are illustrated and described in this disclosure, or that are discussed during the prosecution of the application.

8. SUMMARY

[0078] Although the receptacle assemblies have been disclosed in the context of certain embodiments and examples, the receptacle assemblies extend beyond the specifically disclosed embodiments to other alternative embodiments and/or uses of the embodiments and certain modifications and equivalents thereof. For example, although certain embodiments with a foot pedal are described above, some embodiments include a handle, lever, button, or other actuator that is configured to be actuated by a user to open and close the lid. Any two or more of the components of the receptacle assembly can be made from a single monolithic piece or from separate pieces connected together. Various features and aspects of the disclosed embodiments can be combined with or substituted for one another in order to form varying modes of the invention. The scope of this disclosure should not be limited by the particular disclosed embodiments described herein.

[0079] Certain features that are described in this disclosure in the context of separate implementations can also be implemented in combination in a single implementation. Conversely, various features that are described in the context of a single implementation can also

be implemented in multiple implementations separately or in any suitable subcombination. Although features may be described above as acting in certain combinations, one or more features from a claimed combination can, in some cases, be excised from the combination, and the combination may be claimed as any subcombination or variation of any subcombination.

[0080] Moreover, while operations may be depicted in the drawings or described in the specification in a particular order, such operations need not be performed in the particular order shown or in sequential order, and all operations need not be performed, to achieve the desirable results. Other operations that are not depicted or described can be incorporated in the example methods and processes. For example, one or more additional operations can be performed before, after, simultaneously, or between any of the described operations. Further, the operations may be rearranged or reordered in other implementations. Also, the separation of various system components in the implementations described above should not be understood as requiring such separation in all implementations, and it should be understood that the described components and systems can generally be integrated together in a single product or packaged into multiple products. Additionally, other implementations are within the scope of this disclosure.

[0081] Some embodiments have been described in connection with the accompanying drawings. The figures are drawn to scale, but such scale should not be limiting, since dimensions and proportions other than what are shown are contemplated and are within the scope of the disclosed invention. Distances, angles, etc. are merely illustrative and do not necessarily bear an exact relationship to actual dimensions and layout of the devices illustrated. Components can be added, removed, and/or rearranged. Further, the disclosure herein of any particular feature, aspect, method, property, characteristic, quality, attribute, element, or the like in connection with various embodiments can be used in all other embodiments set forth herein. Additionally, any methods described herein may be practiced using any device suitable for performing the recited steps.

[0082] In summary, various embodiments and examples of receptacle assemblies have been disclosed. Although the receptacle assemblies have been disclosed in the context of those embodiments and examples, this disclosure extends beyond the specifically disclosed embodiments to other alternative embodiments and/or other uses of the embodiments, as well as to certain modifications and equivalents thereof. This disclosure expressly contemplates that various features and aspects of the disclosed embodiments can be combined with, or substituted for, one another. Thus, the scope of this disclosure should not be limited by the particular disclosed embodiments described above, but should be determined only by a fair reading of the claims that follow.

Claims

1. A trash can comprising:

a body unit comprising a front wall, a rear wall, a chamber, and a peripheral lip, the peripheral lip configured to mate with a trash bag such that the trash bag is received in the chamber;
a lid unit coupled to an upper end of the body unit, the lid unit comprising:

a lid configured to pivot between a closed position and an open position; and
a trim ring configured to pivot between a lower position and an upper position, the trim ring being engaged around a portion of the peripheral lip of the body unit in the lower position, a front of the trim ring being pivoted upward from the peripheral lip in the upper position;

a base unit coupled with a lower portion of the body unit, the base unit comprising:

an upper base portion that bounds the bottom of the chamber that receives the trash bag;
a lower base portion connected with the upper base portion, the trash can configured to rest on the lower base portion;
a foot pedal connected with the lower base portion and configured to move between a resting position and an actuated position, the foot pedal operably connected with the lid such that movement of the foot pedal from the resting position to the actuated position moves the lid from the closed position to the open position; and
a motion damper positioned near the front wall and between the lower base portion and the foot pedal, the motion damper configured to dampen movement of the foot pedal from the actuated position to the resting position.

2. The trash can of Claim 1, wherein the motion damper is positioned adjacent the front wall.

3. The trash can of Claim 1 or Claim 2, wherein the motion damper is positioned at about a lateral mid-point of the trash can.

4. The trash can of any of the preceding claims, wherein:

the lower base portion further comprises an upper recess;
the foot pedal further comprises a lower recess;

- and
an upper portion of the motion damper is received in the upper recess and a lower portion of the motion damper is received in the lower recess.
- 5 **14.** The receptacle assembly of Claim 13, wherein the lower base portion further comprises a second recess, a second end of the motion damper being received in the second recess in the lower base.
- 10 **15.** The receptacle assembly of Claim 14, wherein, when the foot pedal is depressed, the motion damper is encapsulated by the foot pedal and the lower base portion.
- 15 **16.** The receptacle assembly of any of Claims 12-15, wherein, when the foot pedal is depressed, a portion of the motion damper slides along the foot pedal.
- 20 **17.** The receptacle assembly of any of Claims 12-16, wherein the receptacle assembly comprises a trash can.
- 25 **18.** The receptacle assembly of any of Claims 12-17, further comprising a secondary motion damper that is configured to dampen movement of the lid during movement of the lid from the open position toward the closed position.
- 30 **19.** The receptacle assembly of Claim 18, wherein the secondary motion damper comprises a spring.
- 35 **20.** A method of manufacturing a receptacle assembly, the method comprising:
attaching a body unit with a lid unit and a base portion to form a closed chamber;
pivotally connecting the foot pedal with the base portion;
operably connecting a linkage with the foot pedal and the lid unit such that the lid is configured to move in response to movement of the foot pedal;
inserting a motion damper between the foot pedal and the base portion; and
vertically compressing the motion damper between the foot pedal and the base portion.
- 40 **21.** The method of Claim 20, further comprising positioning the motion damper near a front wall of the body unit.
- 45 **22.** The method of Claim 21, further comprising positioning the motion damper near a lateral midpoint of the body unit.
- 50 **23.** The method of any of Claims 20-22, further comprising:
receiving a first end of the motion damper in a
- 5.** The trash can of any of the preceding claims, wherein, when the foot pedal is moved from the resting state to the actuated state, a portion of the motion damper slides along the foot pedal.
- 6.** The trash can of any of the preceding claims, wherein, when the foot pedal is in the resting state, the motion damper is encapsulated by the foot pedal and the lower base portion.
- 7.** The trash can of any of the preceding claims, wherein, from a top plan view and a rear elevation view, the motion damper is hidden from view when the lid is in the open position and when the lid is in the closed position.
- 8.** The trash can of any of the preceding claims, wherein the motion damper is positioned in the front quarter of the front-to-rear width of the body unit.
- 9.** The trash can of any of the preceding claims, wherein the motion damper is not connected with the rear wall and not positioned on an exterior surface of the trash can.
- 10.** The trash can of any of the preceding claims, further comprising a secondary motion damper that is configured to dampen movement of the lid during movement of the lid from the open position toward the closed position.
- 11.** The trash can of Claim 10, wherein the secondary motion damper comprises a spring.
- 12.** A receptacle assembly comprising:
a body unit comprising a front wall, a rear wall, a chamber;
a lid unit comprising a lid configured to pivot between a closed position and an open position;
a base unit comprising a foot pedal operably connected with the lid such that, in response to a user depressing a front of the foot pedal, the lid moves from the closed position to the open position, the foot pedal comprising a recess; and
a motion damper positioned near the front wall, the motion damper comprising an end that is received in the recess in the foot pedal, the motion damper being configured to dampen movement of the foot pedal and the lid.
- 13.** The receptacle assembly of Claim 12, wherein the

recess in the base portion; and
 receiving a second end of the motion damper in
 a recess in the foot pedal.

24. The method of Claim 23, wherein:

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the base portion comprises an upper base por-
 tion and a lower base portion, the upper base
 portion comprising a bottom boundary of the
 chamber, the receptacle assembly configured
 to rest on the lower base portion; and
 the method further comprises:

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attaching the upper base portion and the
 lower base portion; and
 receiving an upper part of the recess of the
 lower base portion in a compartment in the
 upper base portion.

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25. The method of any of Claims 20-24, further compris-
 ing positioning a biasing member around a portion
 of the linkage.

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26. The method of any of Claims 20-25, further compris-
 ing compressing a secondary motion damper be-
 tween a rear portion of the lid and a portion of the
 linkage.

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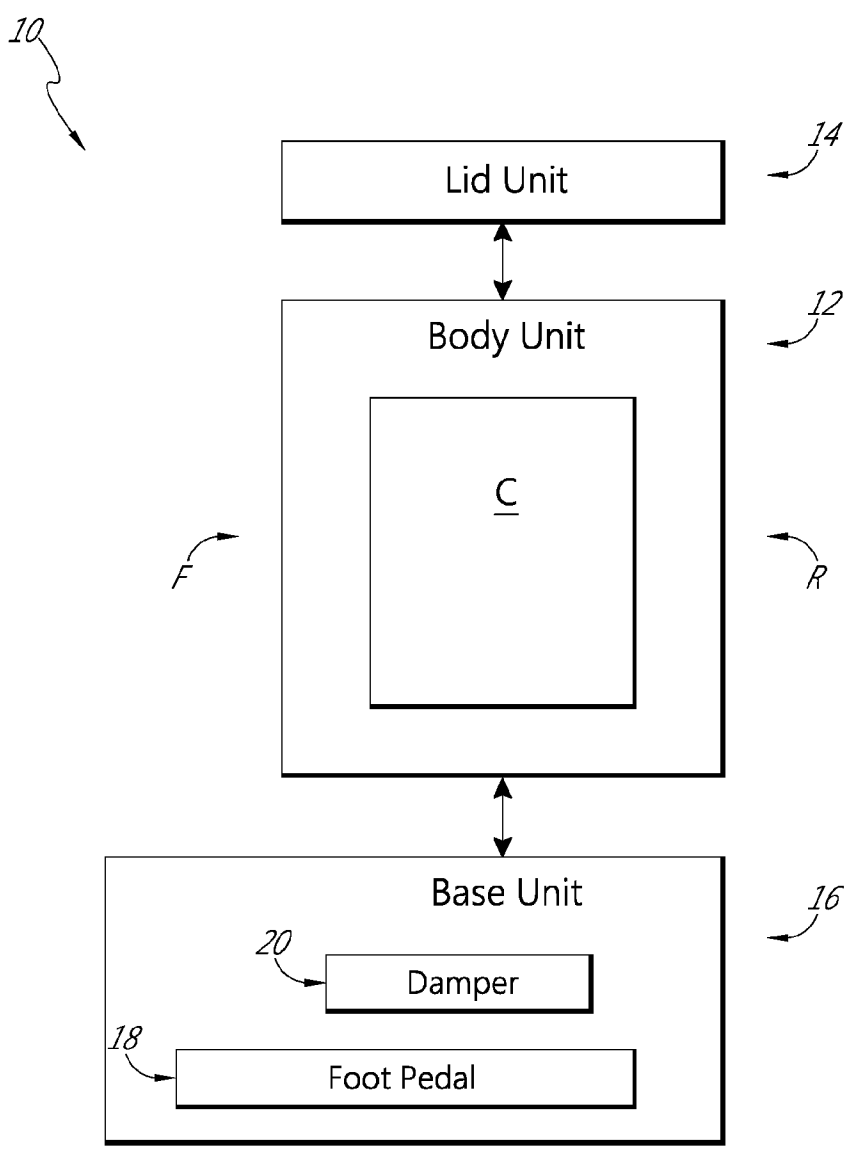
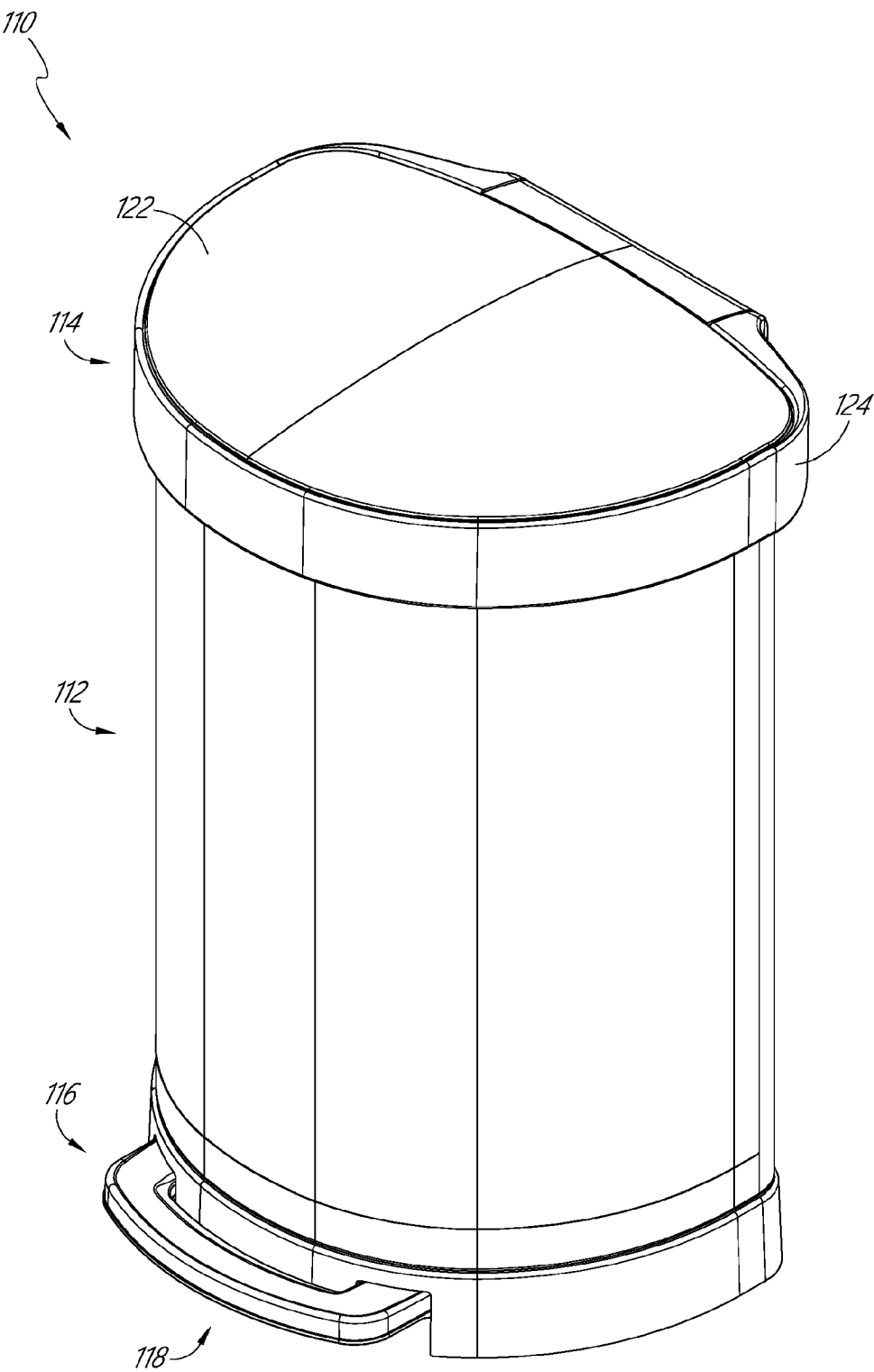


FIG. 1

FIG. 2



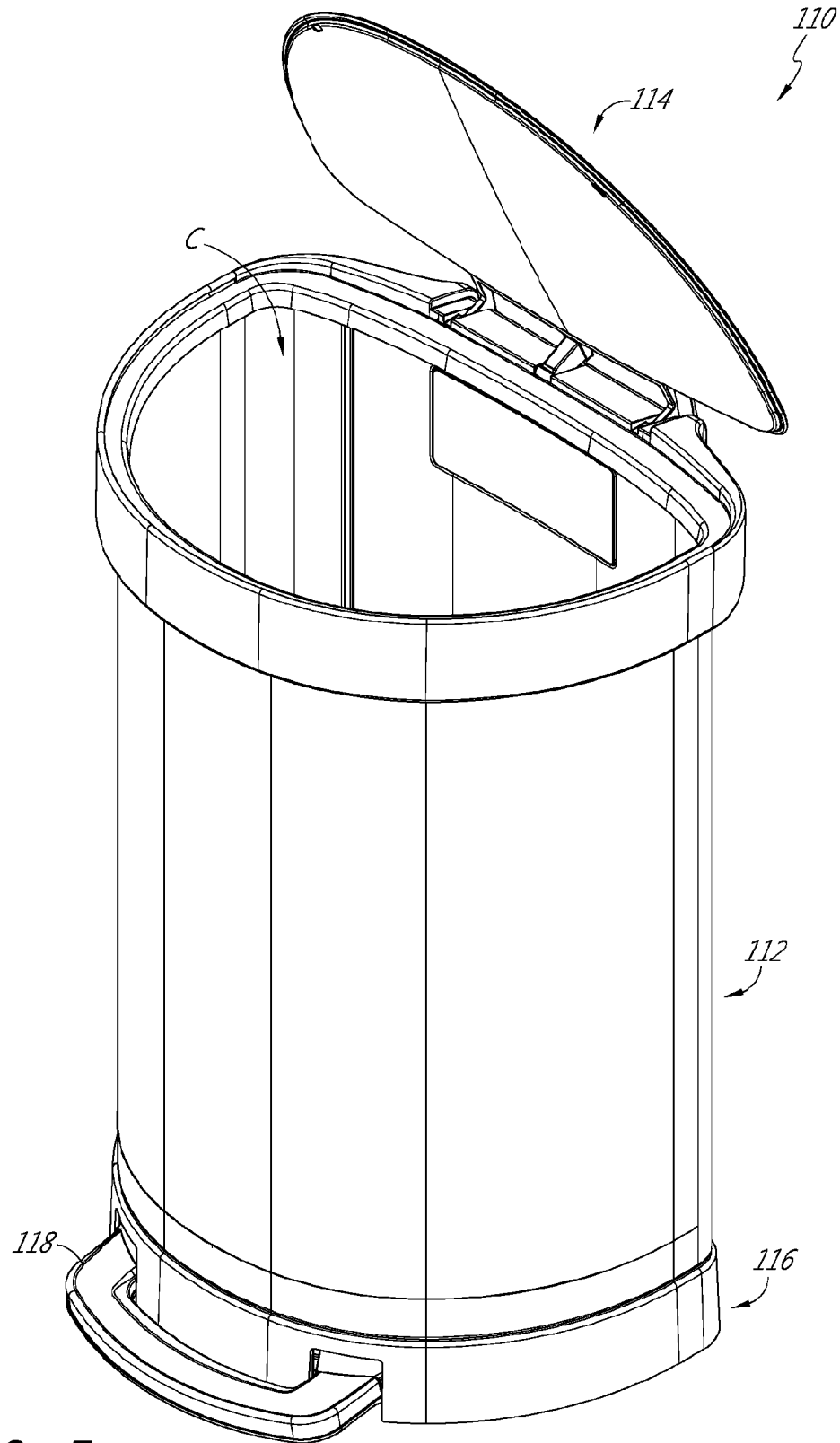


FIG. 3

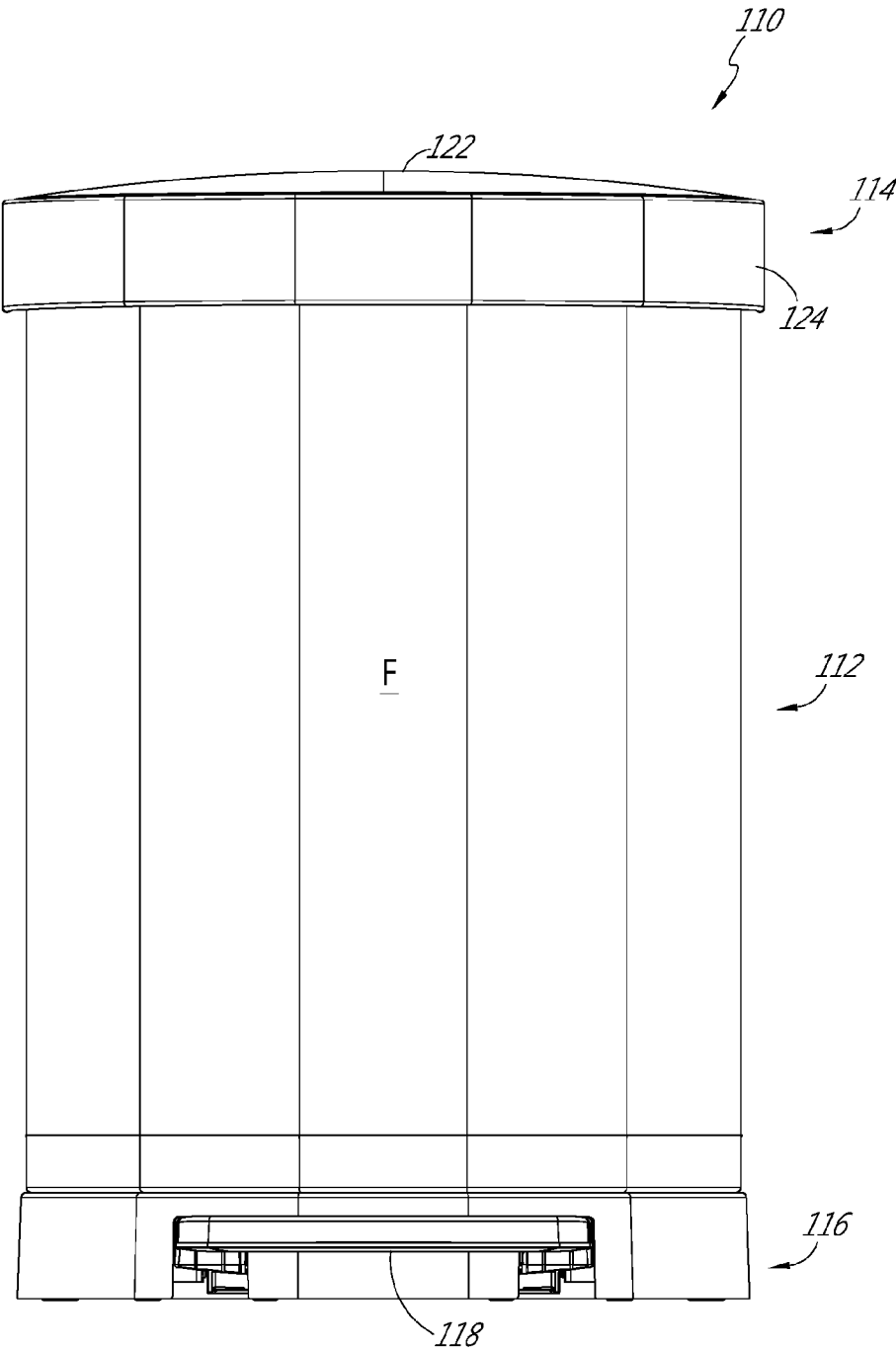


FIG. 4

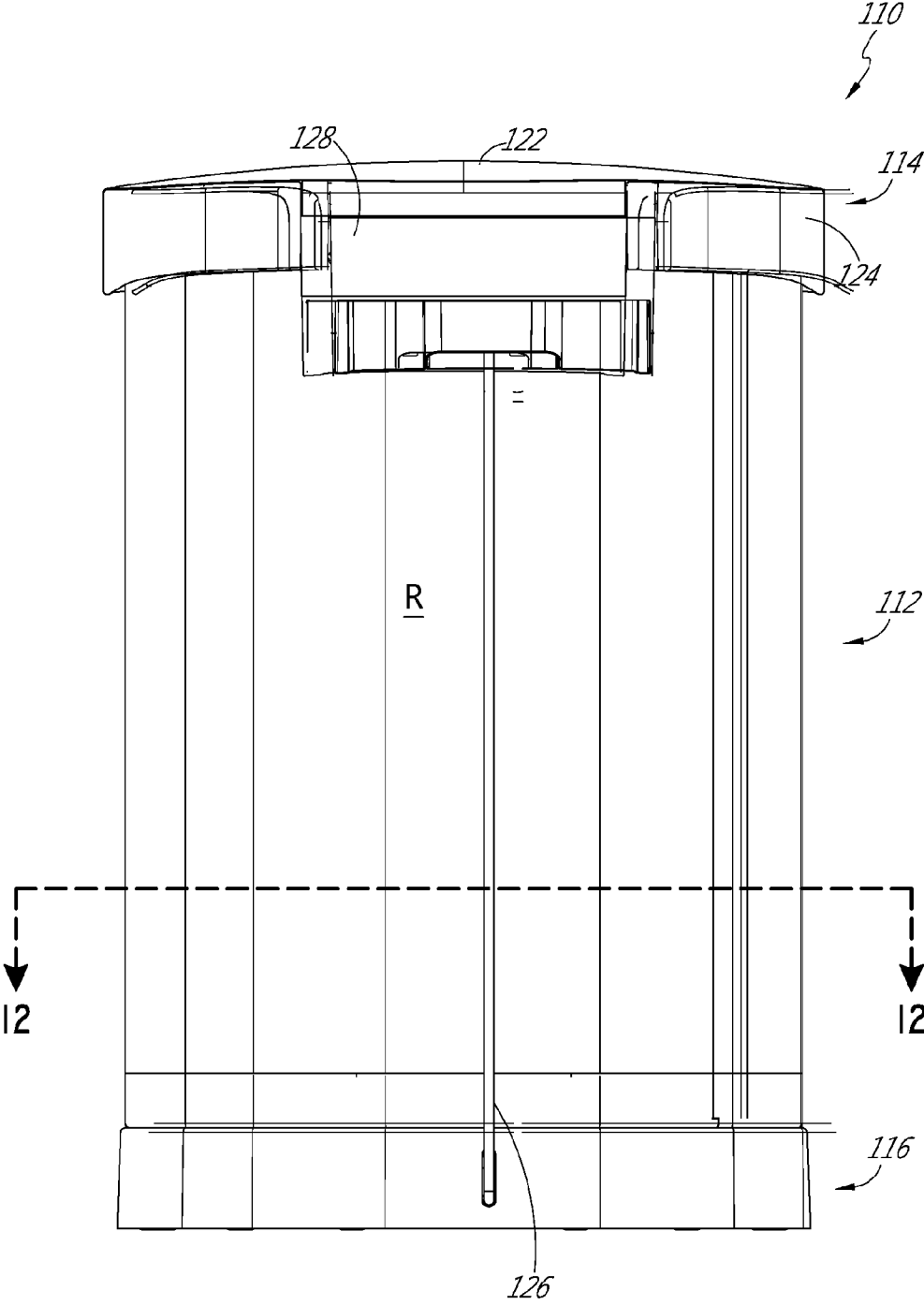


FIG. 5

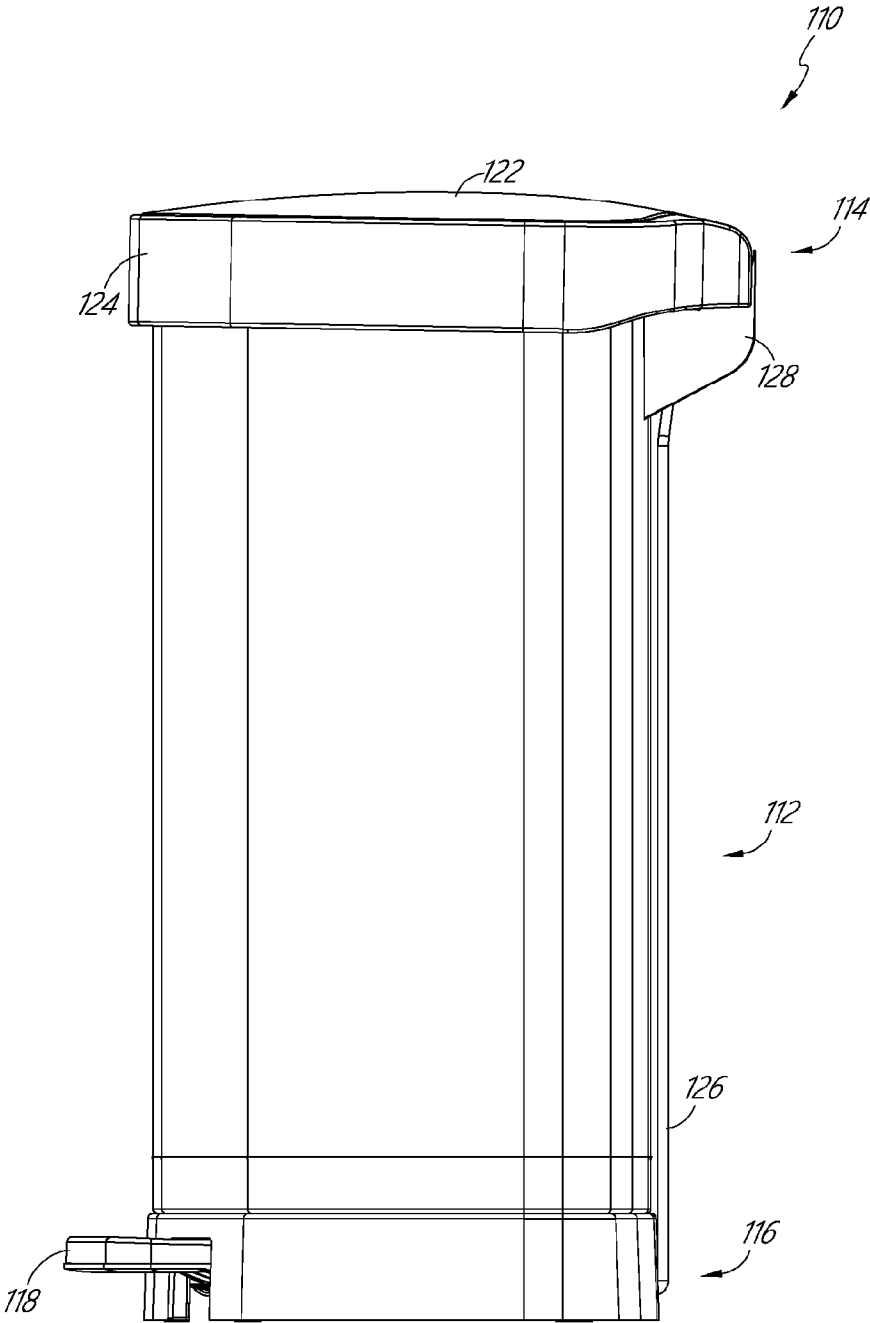
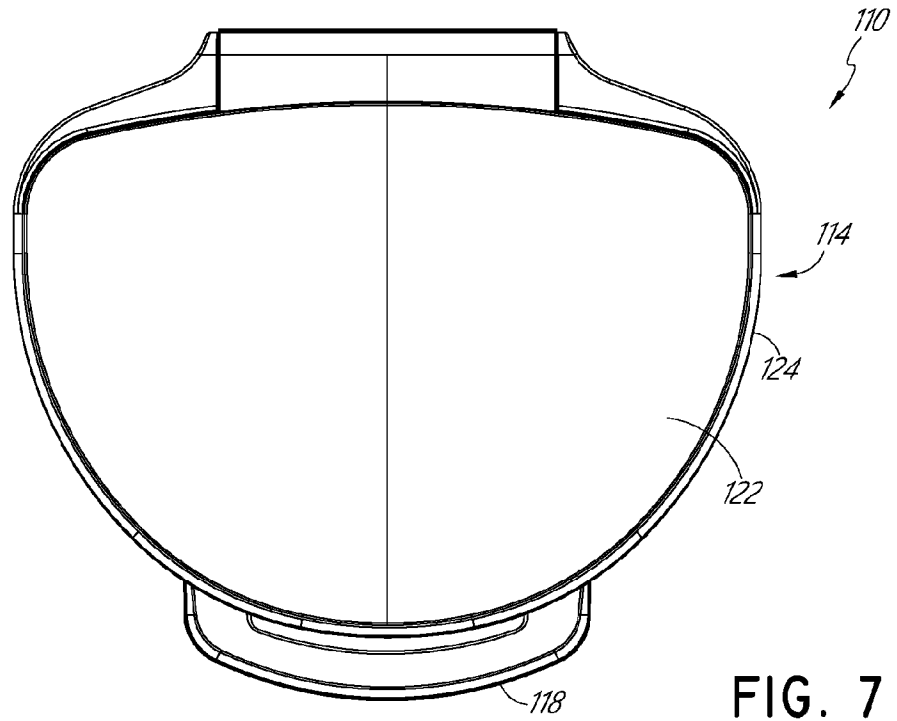
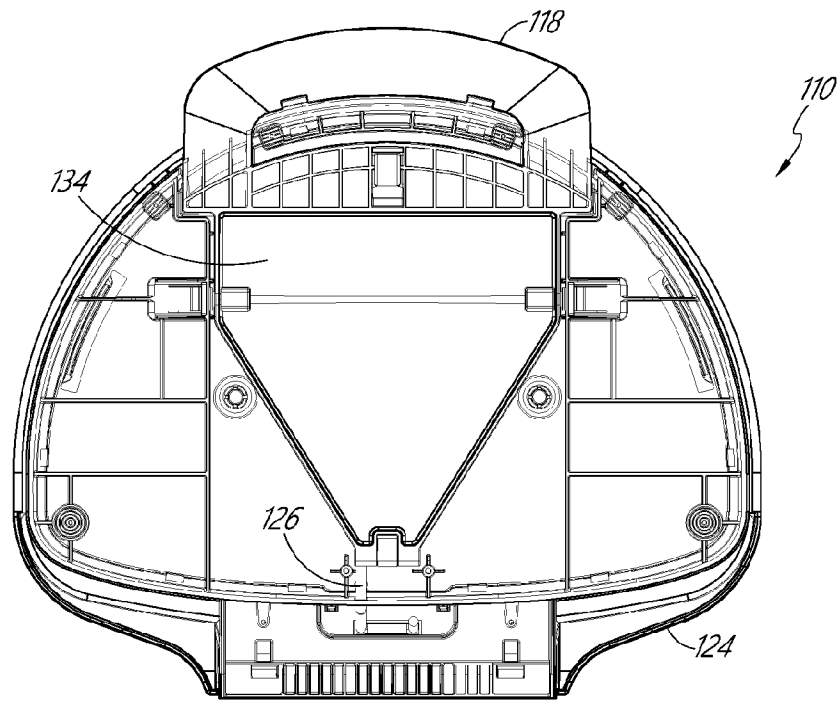


FIG. 6



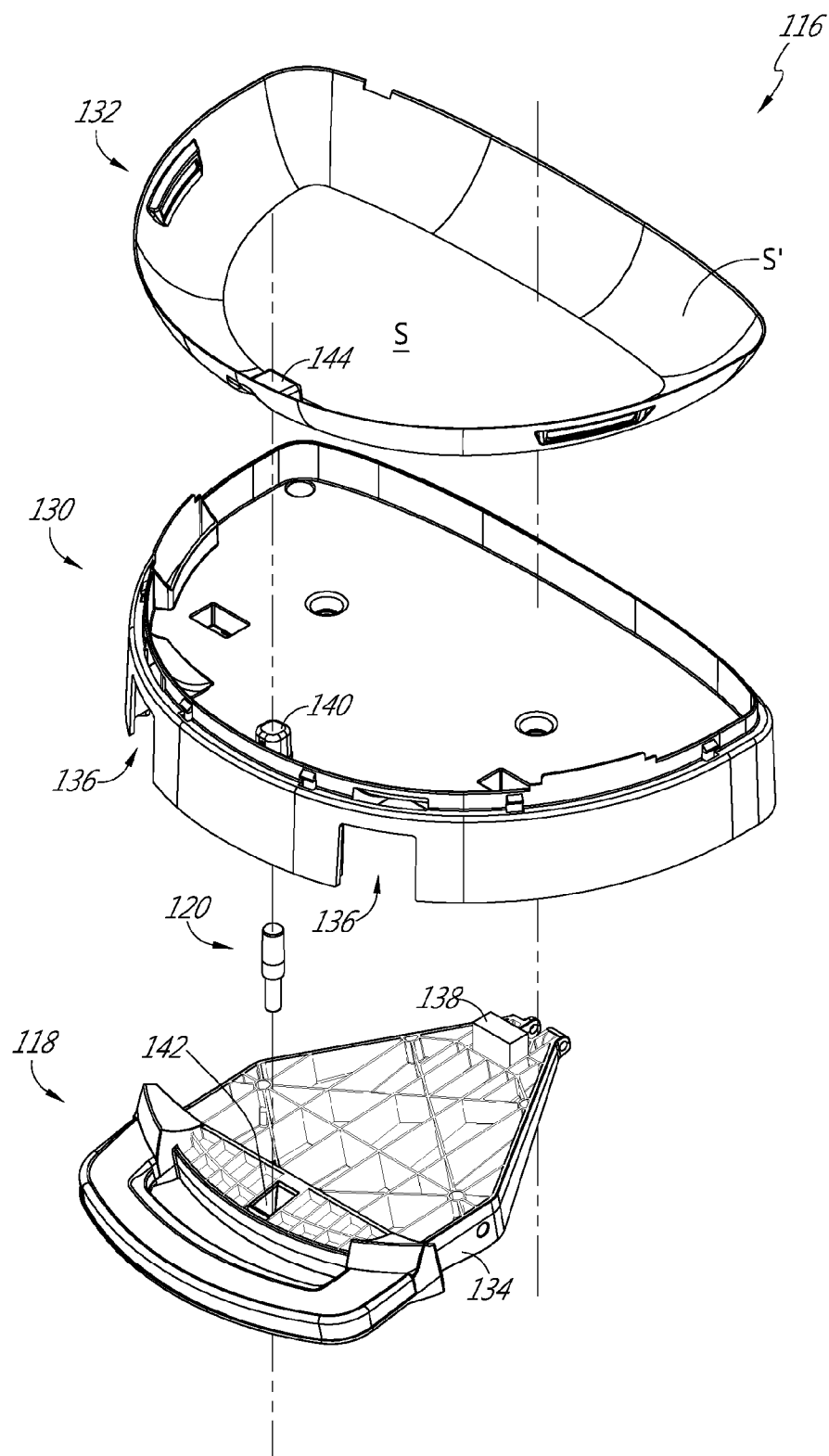
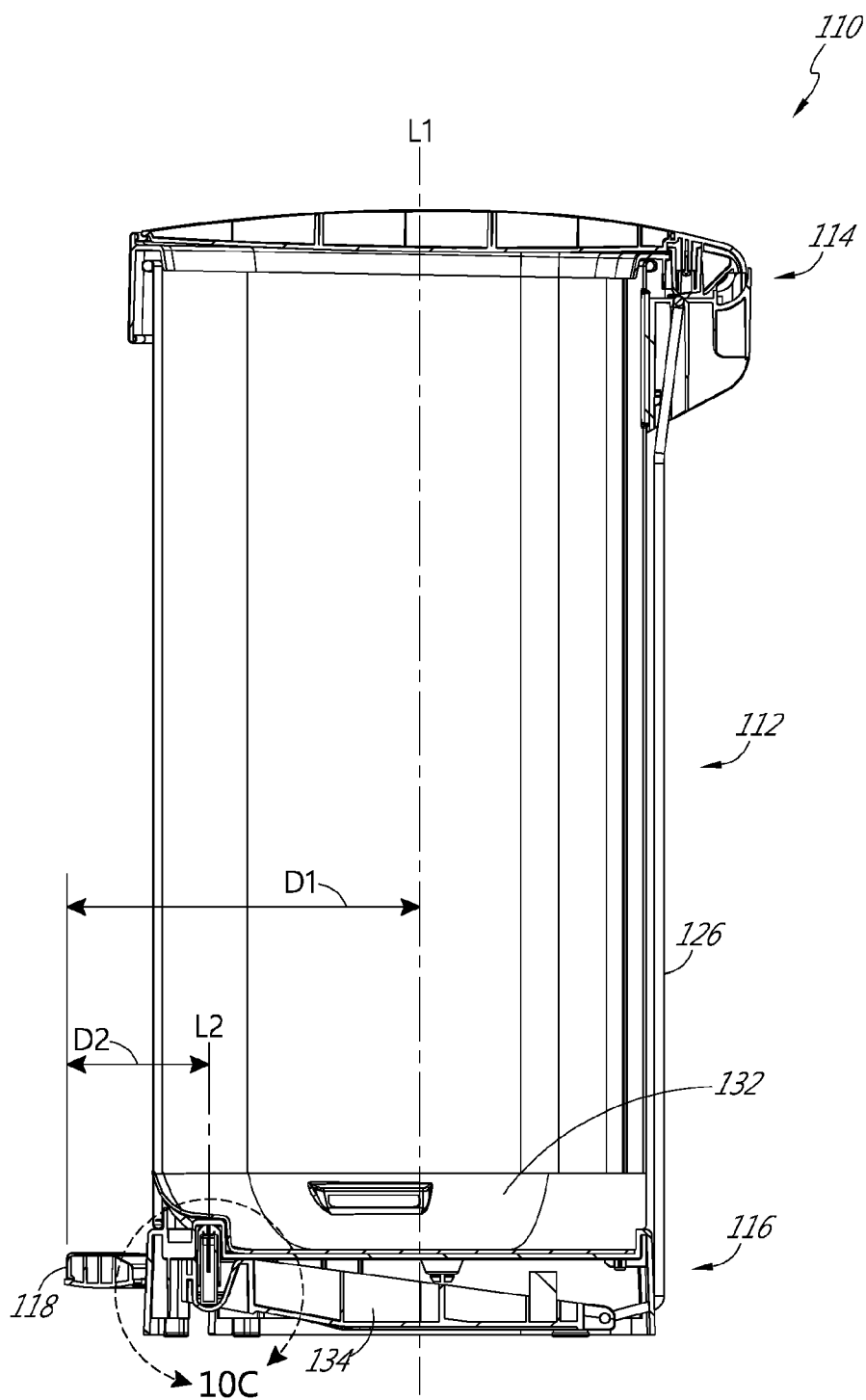


FIG. 9

FIG. 10B



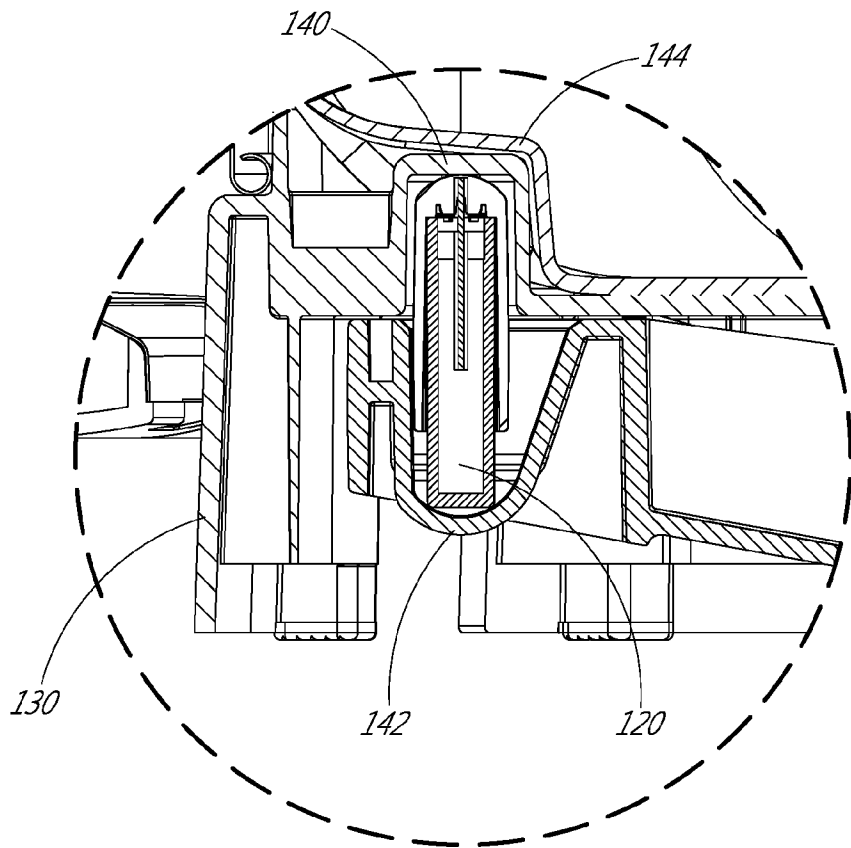


FIG. 10C

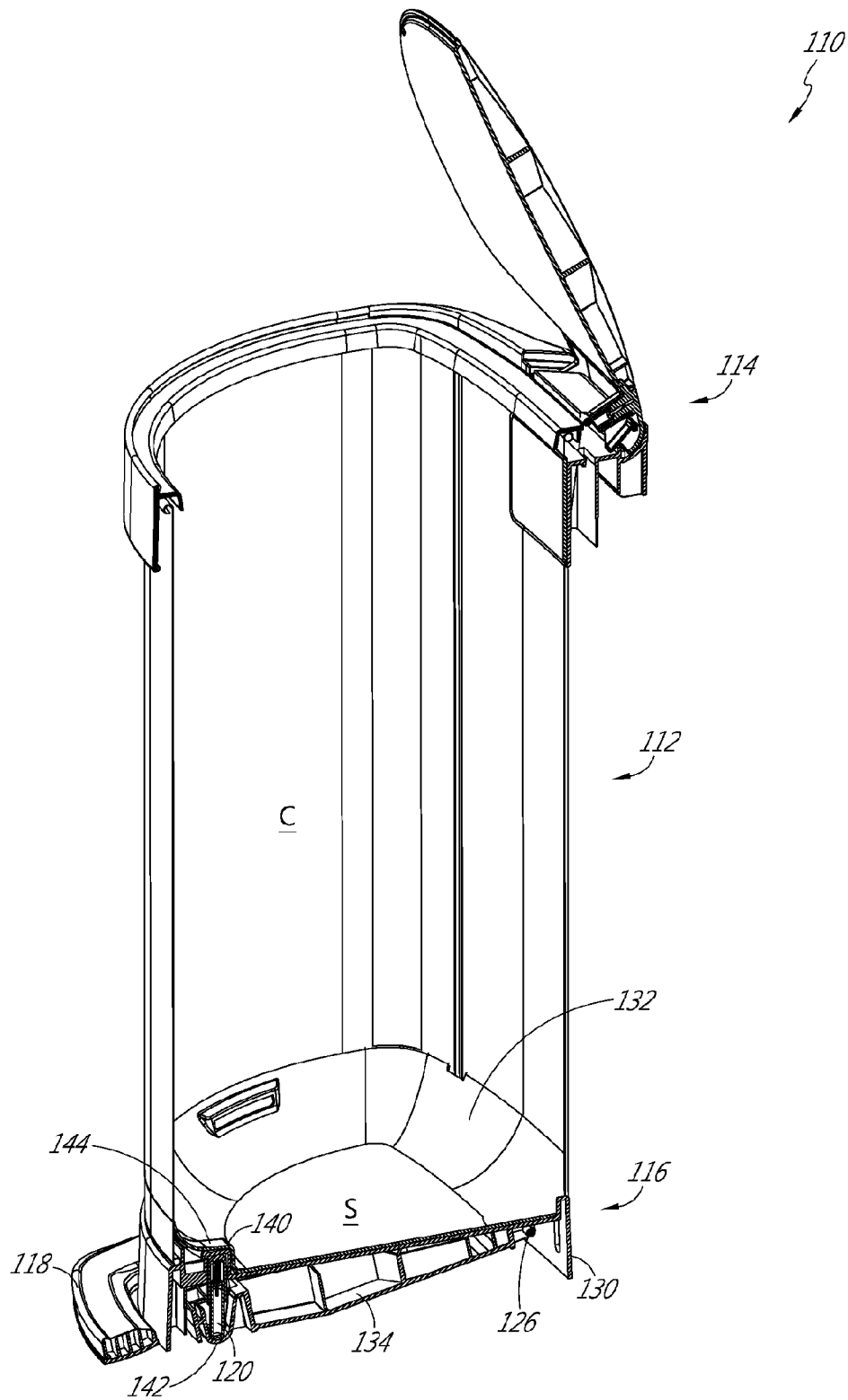
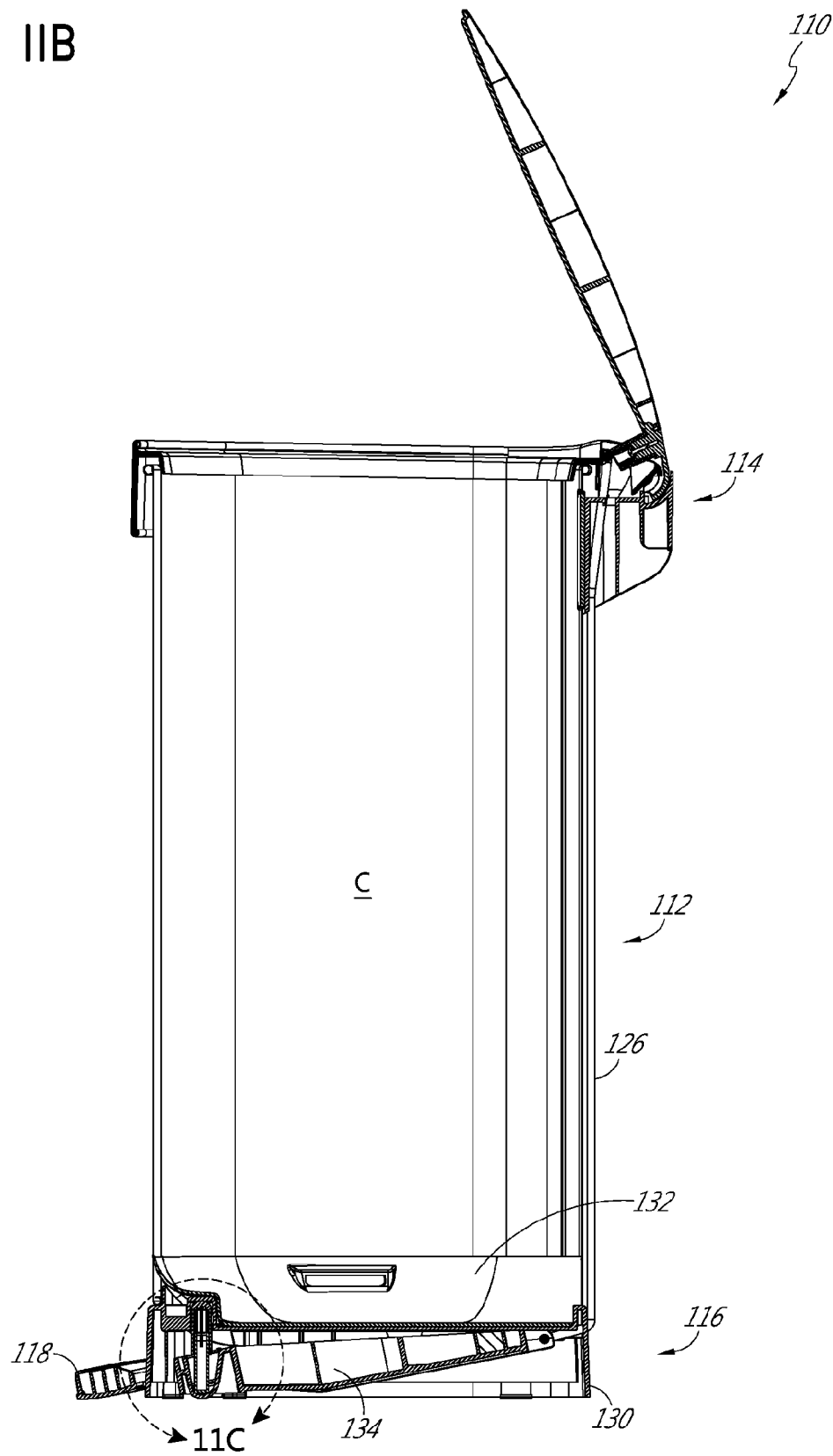


FIG. IIA

FIG. IIB



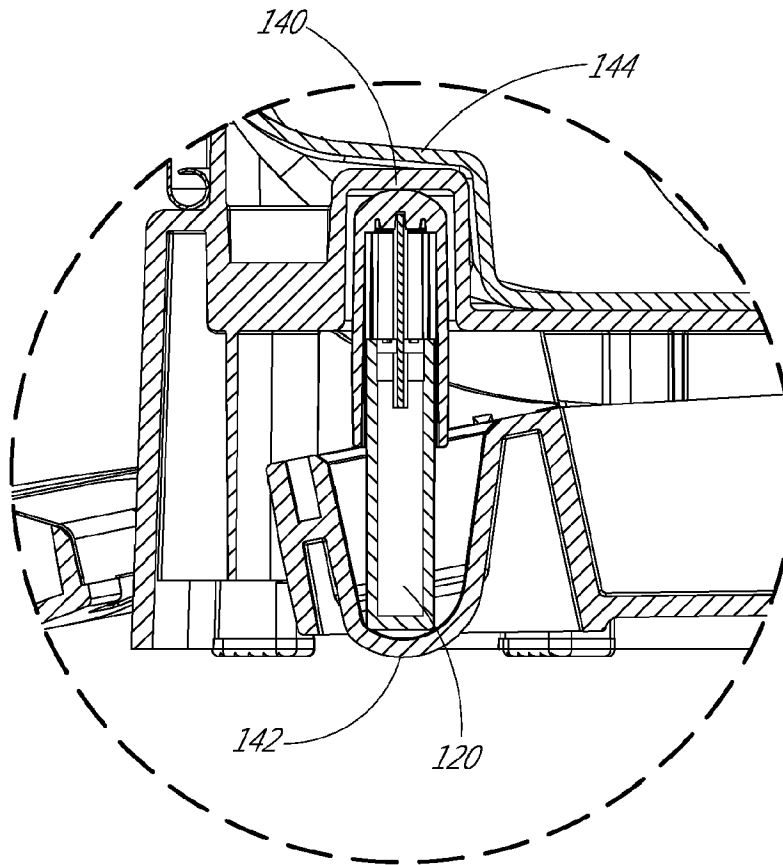


FIG. IIC

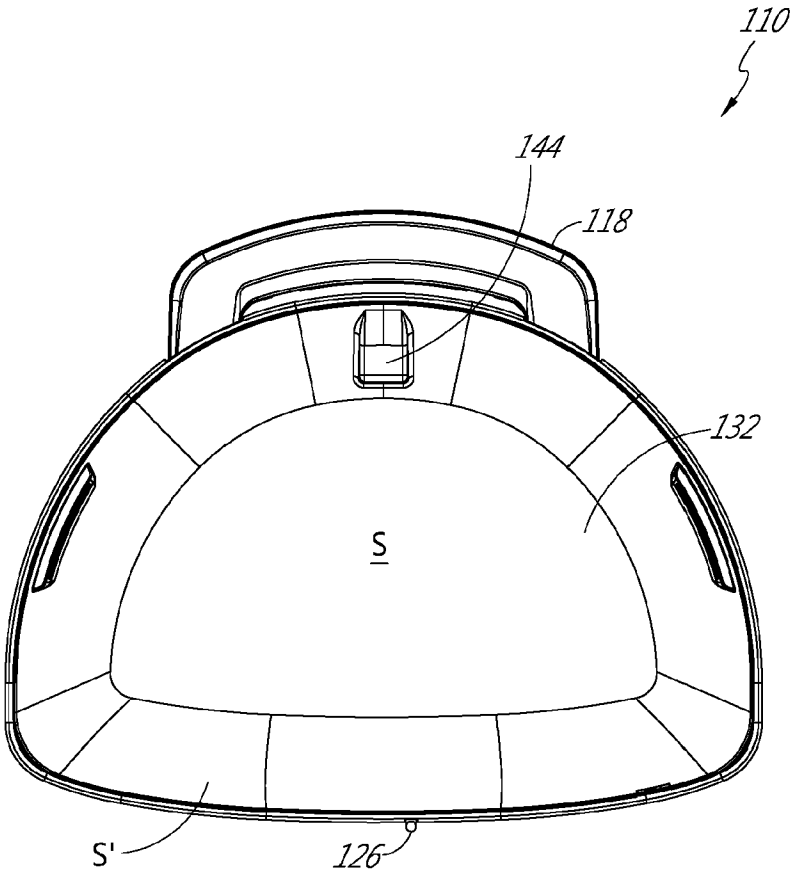


FIG. 12

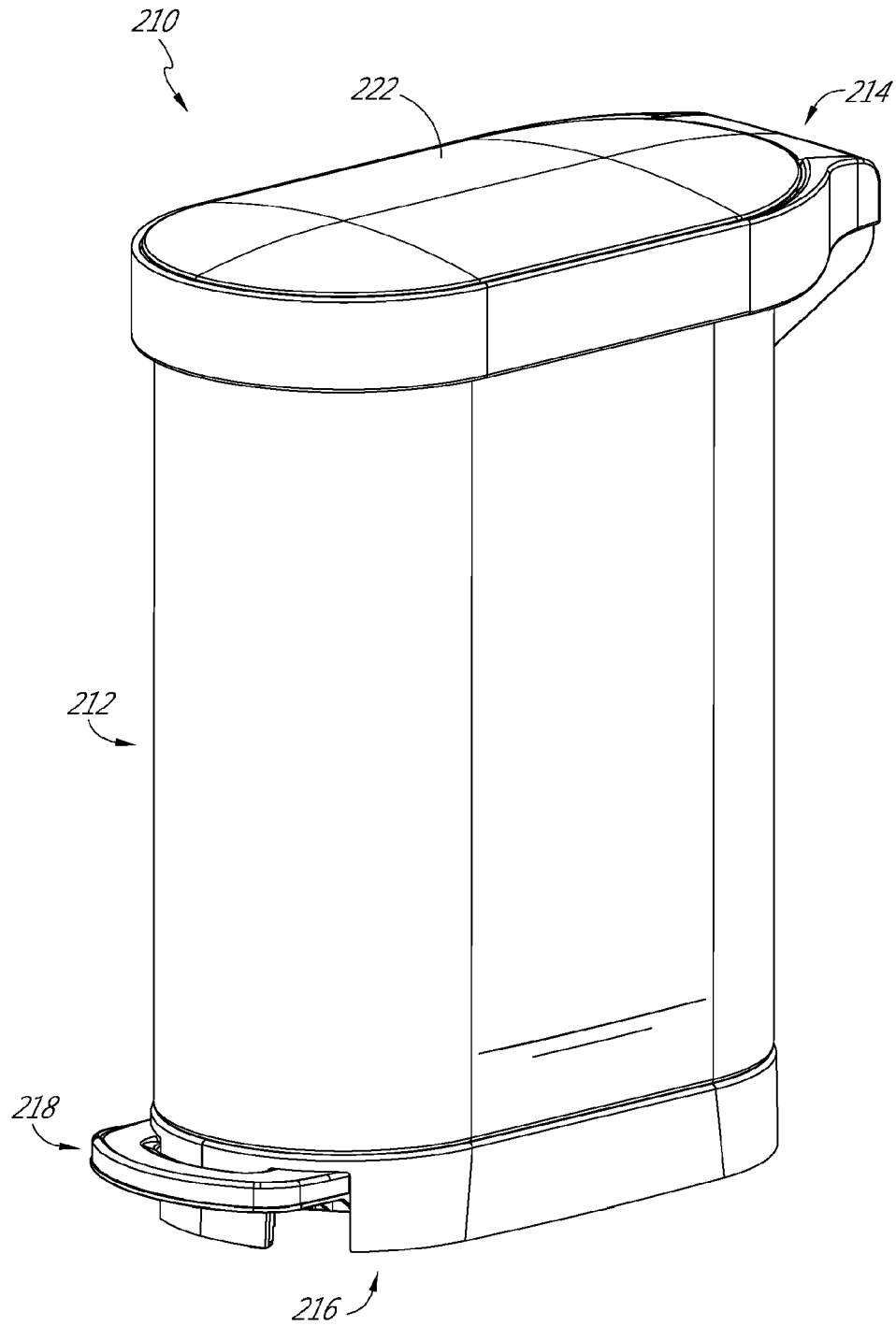


FIG. 13

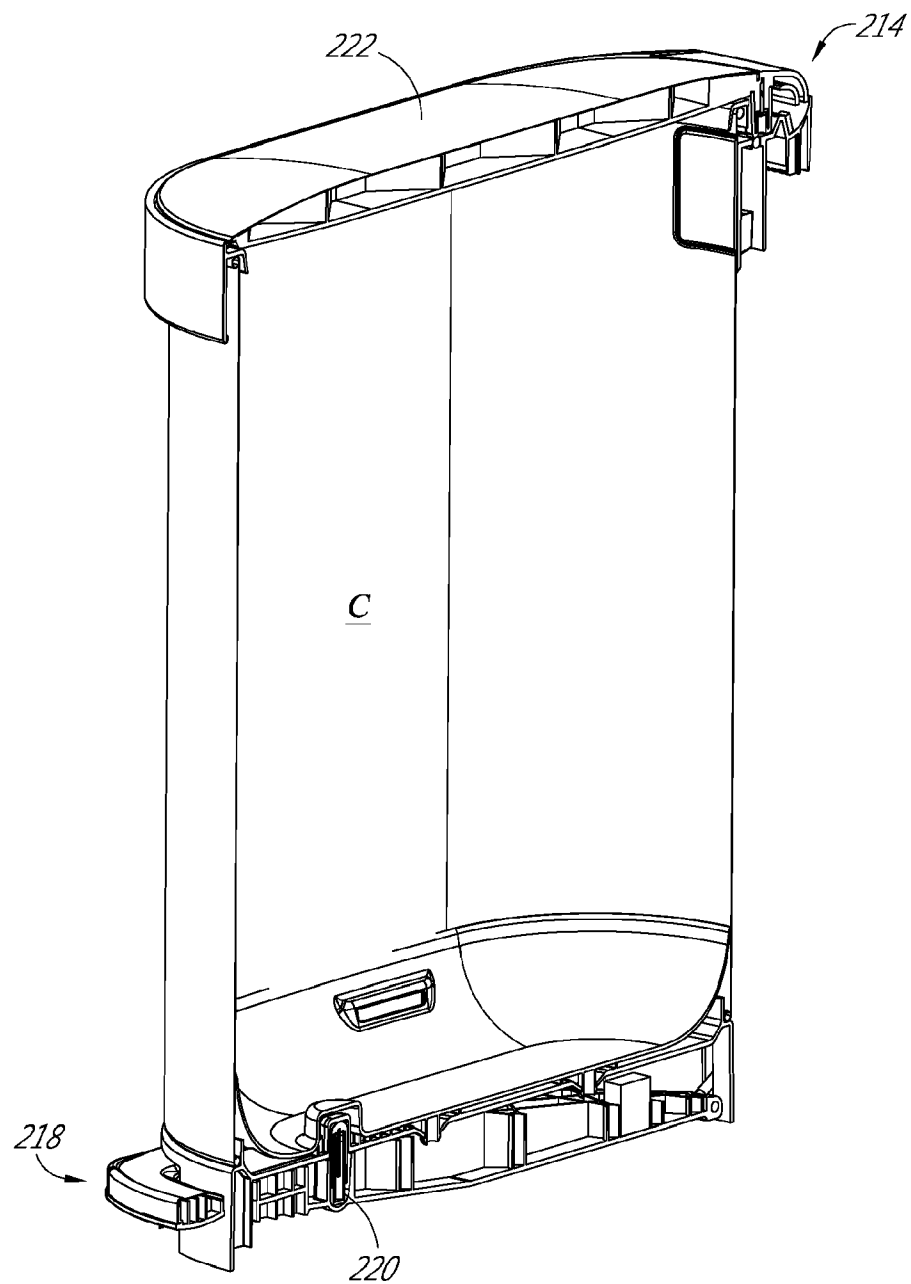


FIG. 14

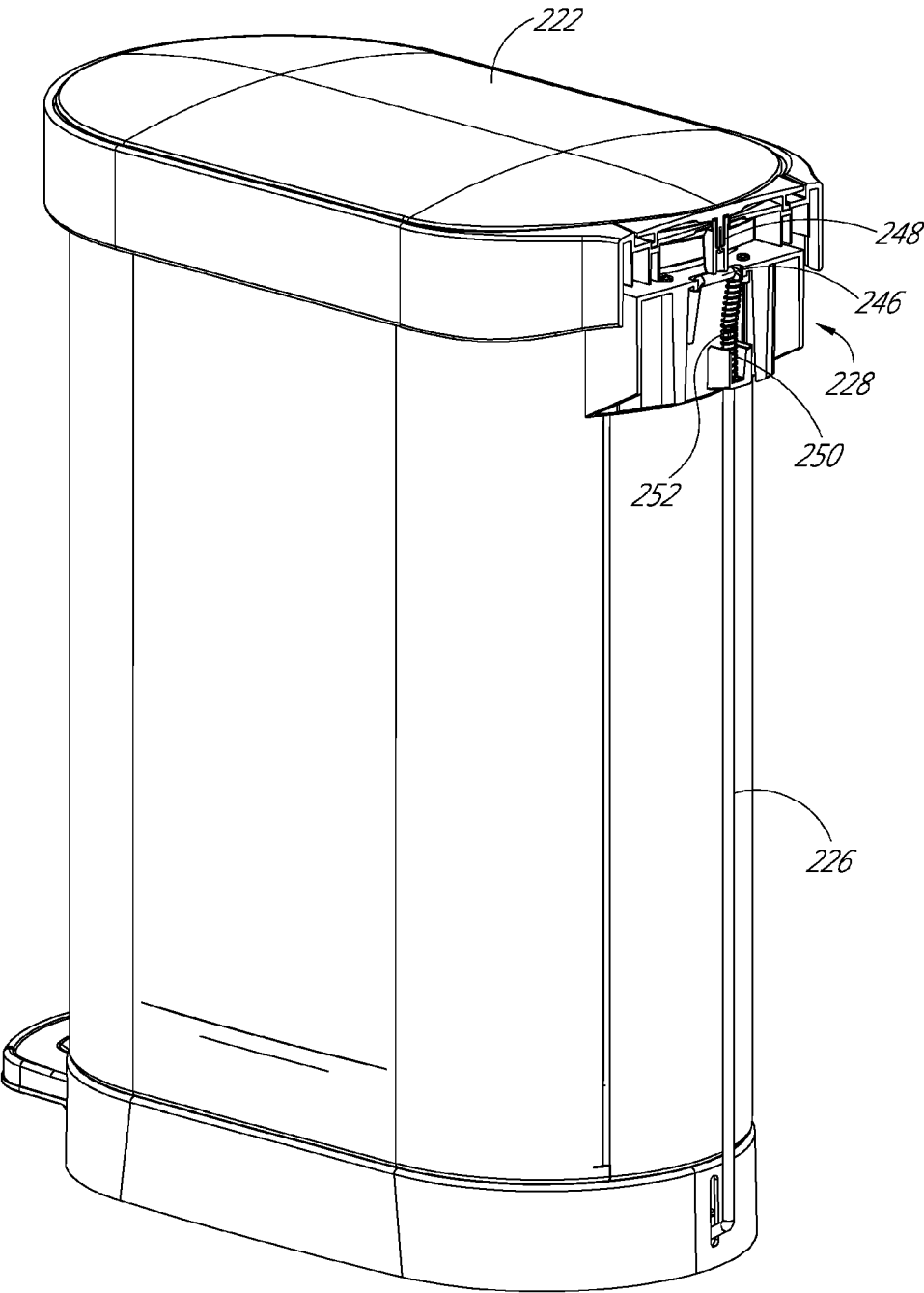


FIG. 15

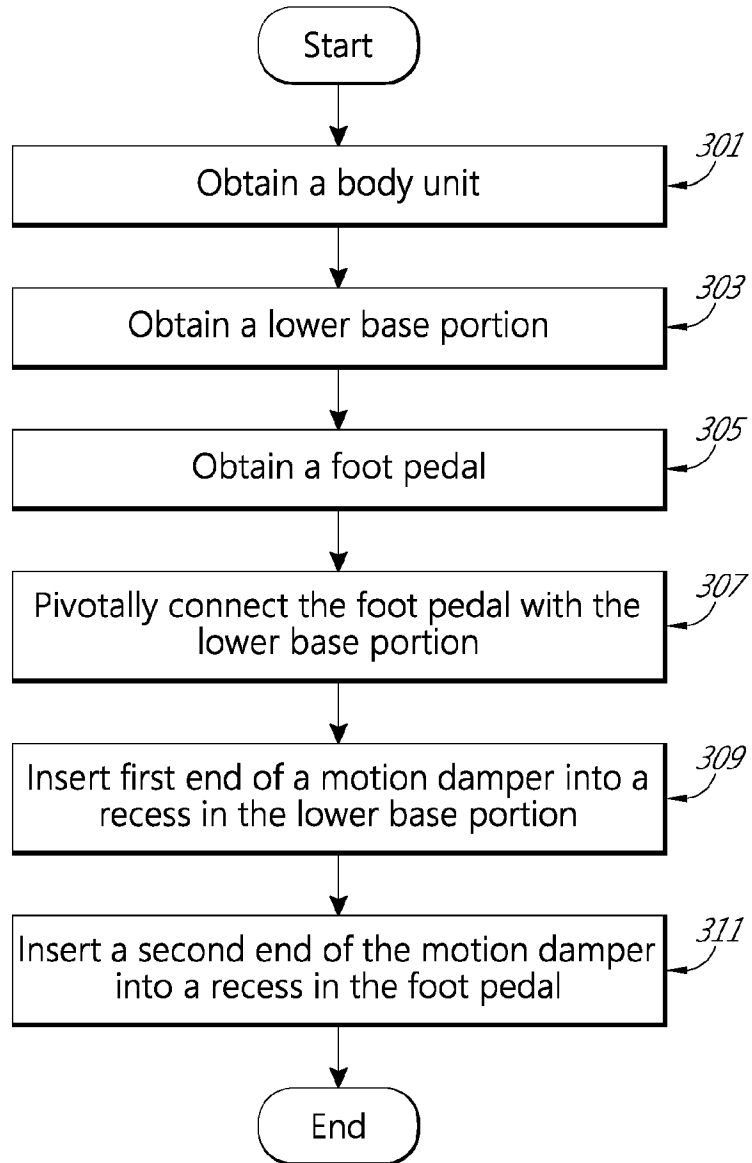
300


FIG. 16



EUROPEAN SEARCH REPORT

Application Number
EP 17 15 9265

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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	US 2014/238989 A1 (X. WANG ET AL.) 28 August 2014 (2014-08-28)	1-3,7-9, 12,13, 17,20-23	INV. B65F1/16
A	* paragraph [0030] - paragraph [0060] * * figures 1-7 *	4-6,10, 11, 14-16, 18,19	
X,P	----- EP 3 042 864 A1 (ROTHO KUNSTSTOFF AG) 13 July 2016 (2016-07-13) * paragraph [0027] - paragraph [0036] * * figures 1-6 * -----	12-15, 17,20-23	
			TECHNICAL FIELDS SEARCHED (IPC)
			B65F
The present search report has been drawn up for all claims			
Place of search		Date of completion of the search	Examiner
The Hague		26 June 2017	Smolders, Rob
CATEGORY OF CITED DOCUMENTS			
T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			
X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document			

EPO FORM 1503 03.82 (F04C01)

**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 17 15 9265

5

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
The members are as contained in the European Patent Office EDP file on
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

26-06-2017

10

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2014238989 A1	28-08-2014	NONE	
EP 3042864 A1	13-07-2016	EP 3042864 A1	13-07-2016
		US 2016200508 A1	14-07-2016

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EPO FORM P0459

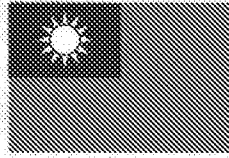
For more details about this annex : see Official Journal of the European Patent Office, No. 12/82

REFERENCES CITED IN THE DESCRIPTION

This list of references cited by the applicant is for the reader's convenience only. It does not form part of the European patent document. Even though great care has been taken in compiling the references, errors or omissions cannot be excluded and the EPO disclaims all liability in this regard.

Patent documents cited in the description

- US 62303166 A [0001]
- US 55703216 F [0001]
- US 9051093 B [0014]
- US 20130233857 A [0018]
- US 8418869 B [0032]



中華民國專利證書

設計第 D183552 號

設計名稱：垃圾桶

專利權人：辛普休曼股份有限公司

設計人：楊紹培、張狄風、林邁克、韋德亞當、米勒海倫

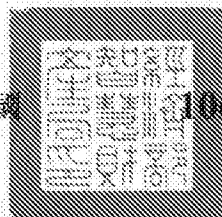
專利權期間：自2017年6月11日至2028年9月1日止

上開設計業經專利權人依專利法之規定取得專利權

經濟部智慧財產局 局長

洪淑敏

中華民國 106 年 6 月 11 日



【19】中華民國

【12】專利公報 (S)

【11】證書號數：D183552

【45】公告日：中華民國 106 (2017) 年 06 月 11 日

【51】LOC. (9) CL：09-09

設計

全7頁

【54】名稱：垃圾桶

TRASH CAN

【21】申請案號：105305162

【22】申請日：中華民國 105 (2016) 年 09 月 02 日

【30】優先權：2016/03/04

美國

29/557,032

【72】設計人：楊 紹培 (US) YANG, FRANK；張 秋風 (US) CHANG, DI-FONG；林 邁克 (US) LUM, MYK；韋德 亞當 (US) WADE, ADAM；米勒 海倫 (US) MILLER, HELEN

【71】申請人：辛普休曼股份有限公司
美國

SIMPLEHUMAN, LLC

【74】代理人：李世章

【56】參考文獻：

TW D112733

TW D129485

TW D133678

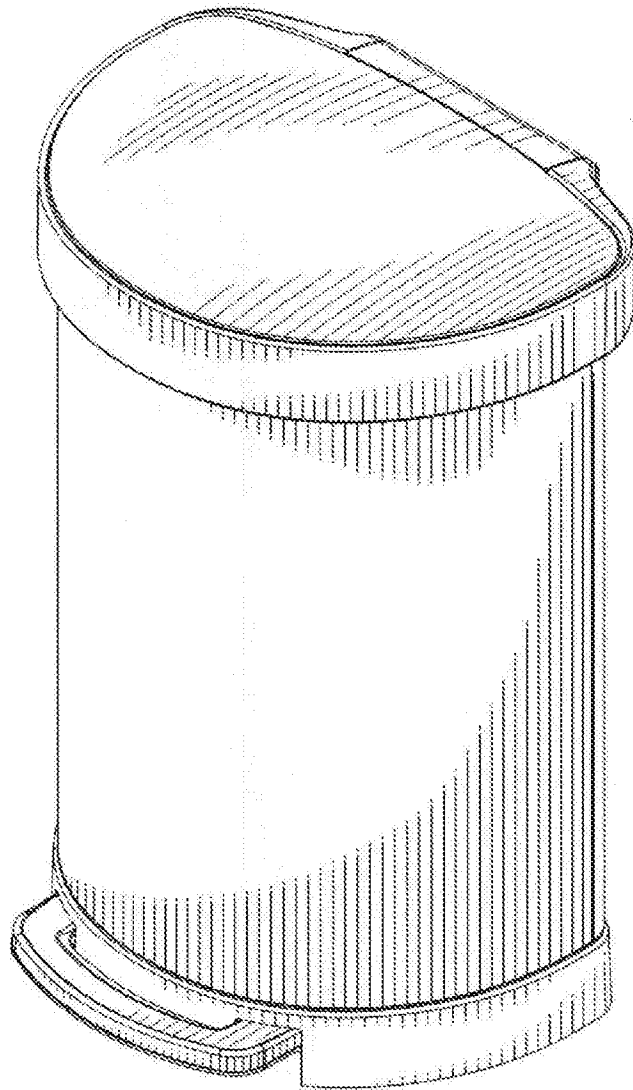
TW D158187

審查人員：陳慧媛

設計說明

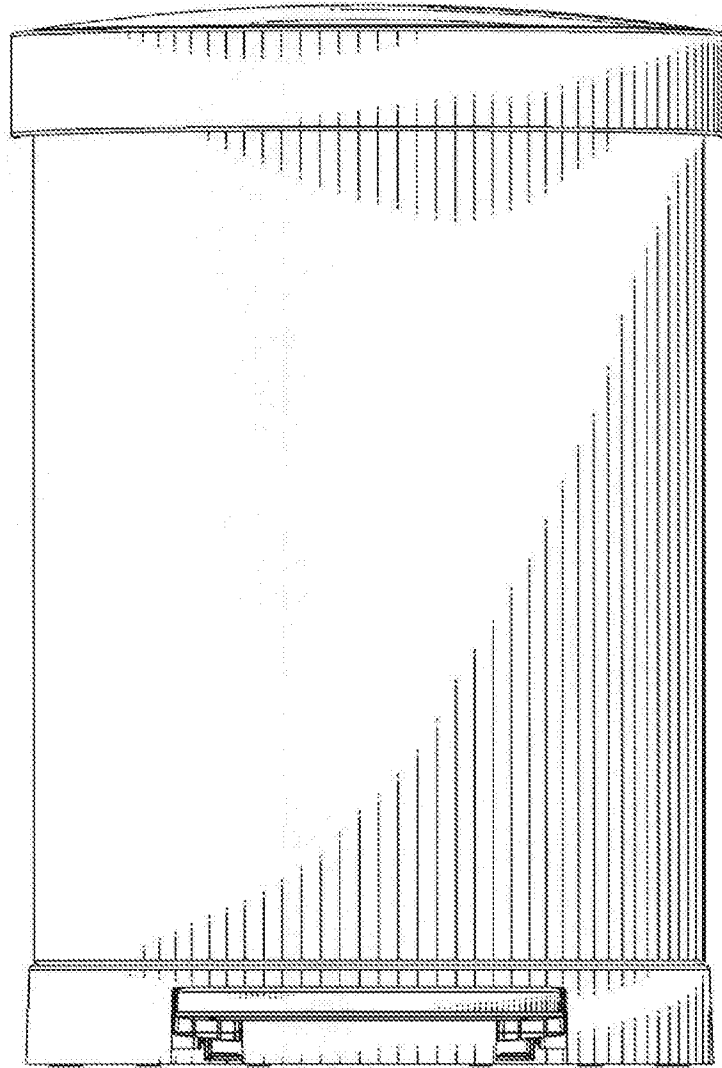
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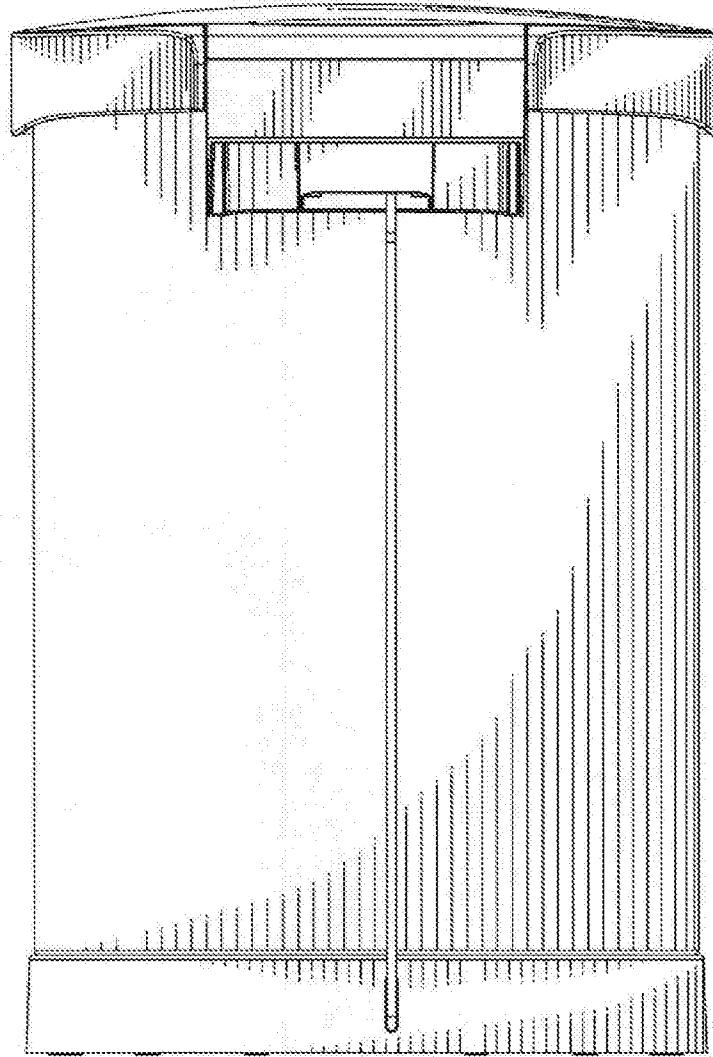
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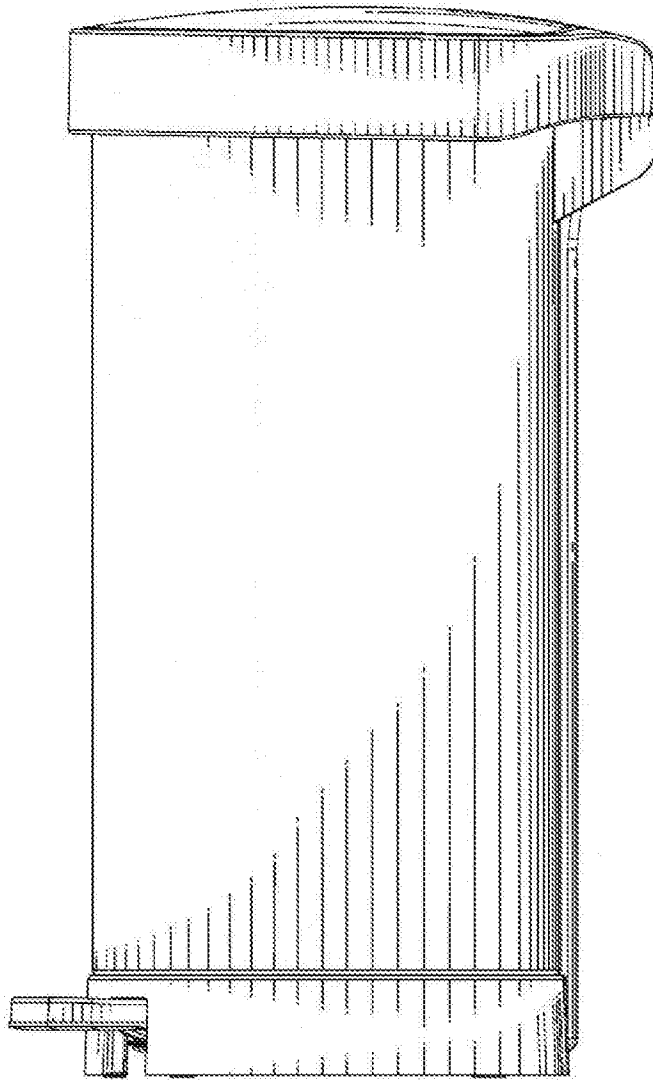
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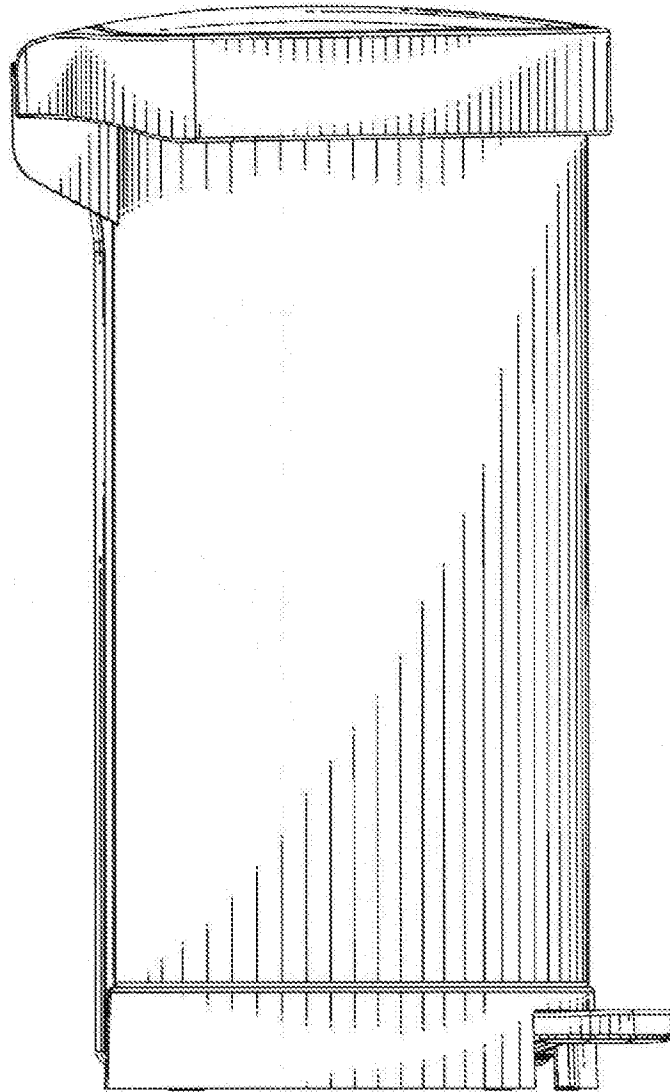
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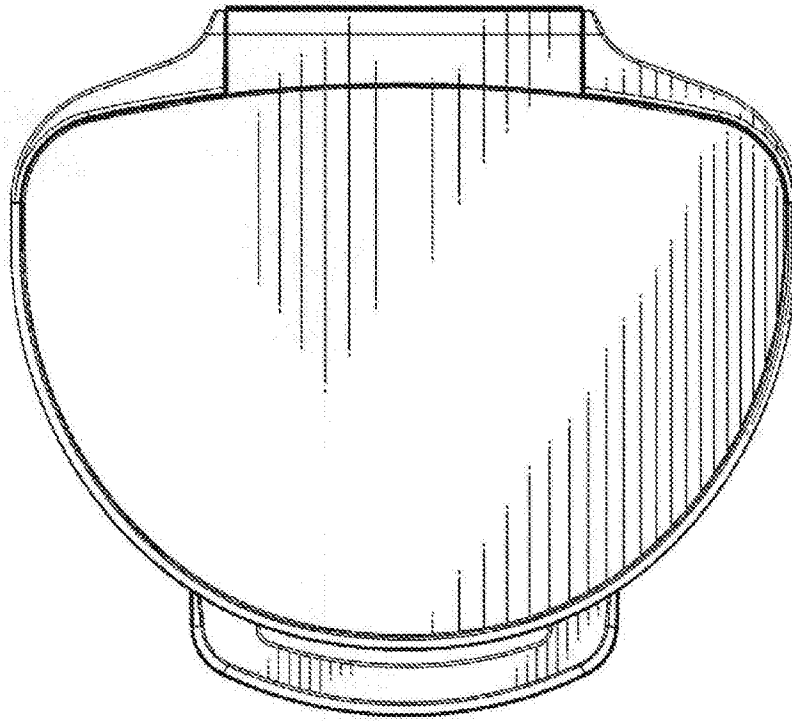
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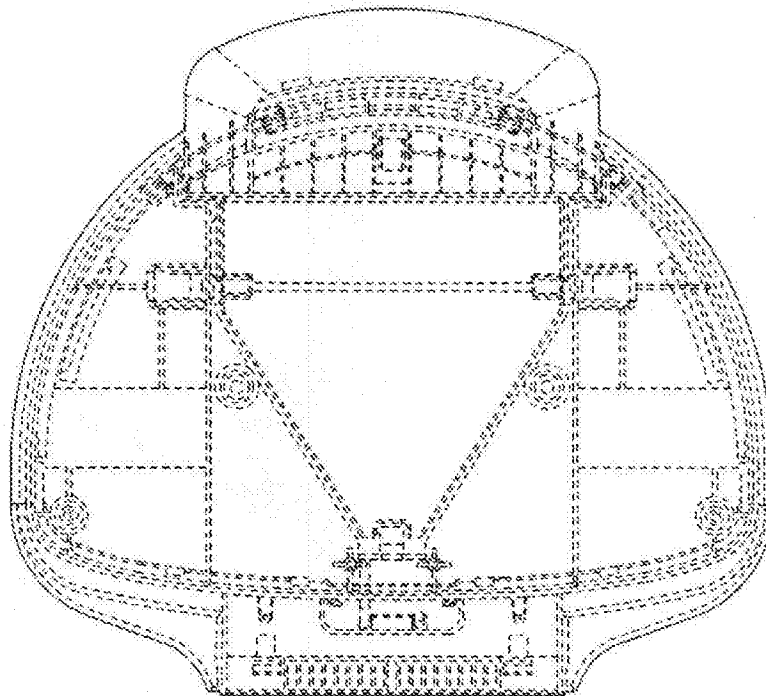


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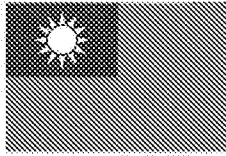


俯視圖



仰視圖

- 18782 -



中華民國專利證書

設計第 D184449 號

設計名稱：垃圾桶

專利權人：辛普休曼股份有限公司

設計人：楊紹培、劉邁克偉恩、魏孜浩、張狄風、韋德亞當C

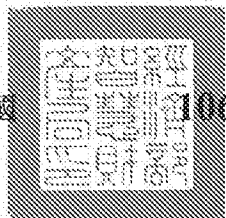
專利權期間：自2017年7月21日至2028年6月7日止

上開設計業經專利權人依專利法之規定取得專利權

經濟部智慧財產局局長

洪淑敏

中華民國 106 年 7 月 21 日



【19】中華民國

【12】專利公報 (S)

【11】證書號數：D184449

【45】公告日：中華民國 106 (2017) 年 07 月 21 日

【51】LOC. (9) Cl. : 09-09

設計

全8頁

【54】名稱：垃圾桶

TRASH CAN

【21】申請案號：105303316

【22】申請日：中華民國 105 (2016) 年 06 月 08 日

【30】優先權：2015/12/09

美國

29/548,018

【72】設計人：楊紹培 (US) YANG, FRANK；劉邁克偉恩 (US) LUM, MYK WAYNE；
魏孜浩 (US) WEI, TZU-HAO；張狄風 (TW) CHANG, DI-FONG；韋德
亞當 C (US) WADE, ADAM C.

【71】申請人：辛普休曼股份有限公司
美國

SIMPLEHUMAN, LLC

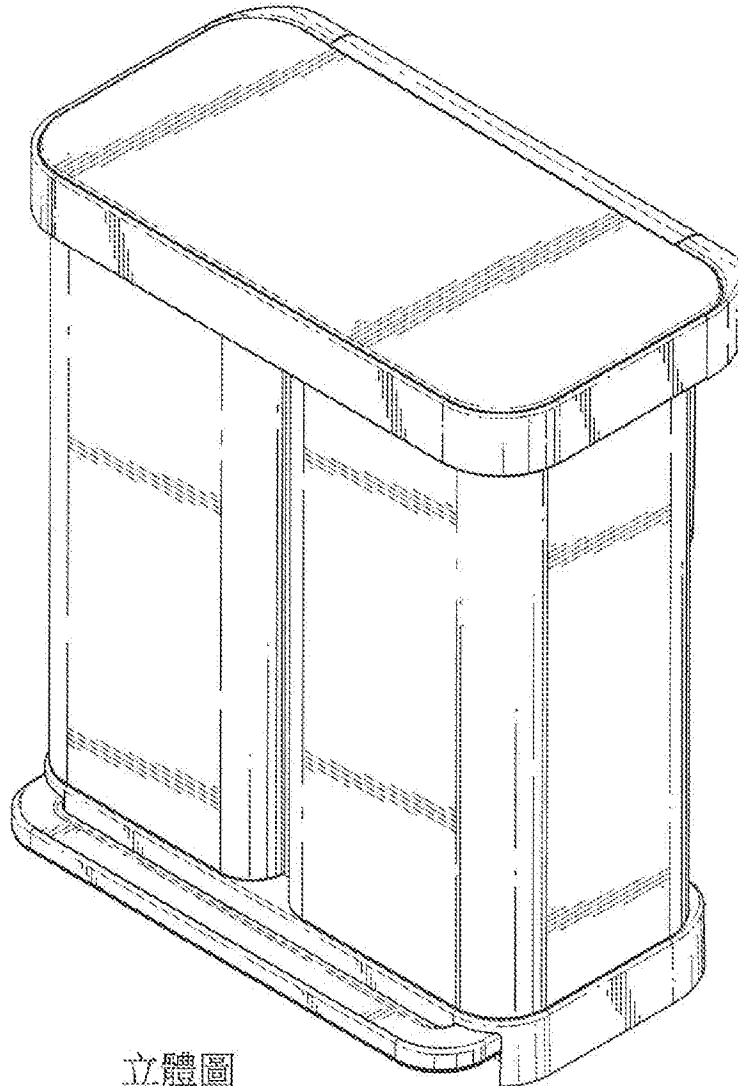
【74】代理人：李世章；彭國洋

審查人員：陳慈媛

設計說明

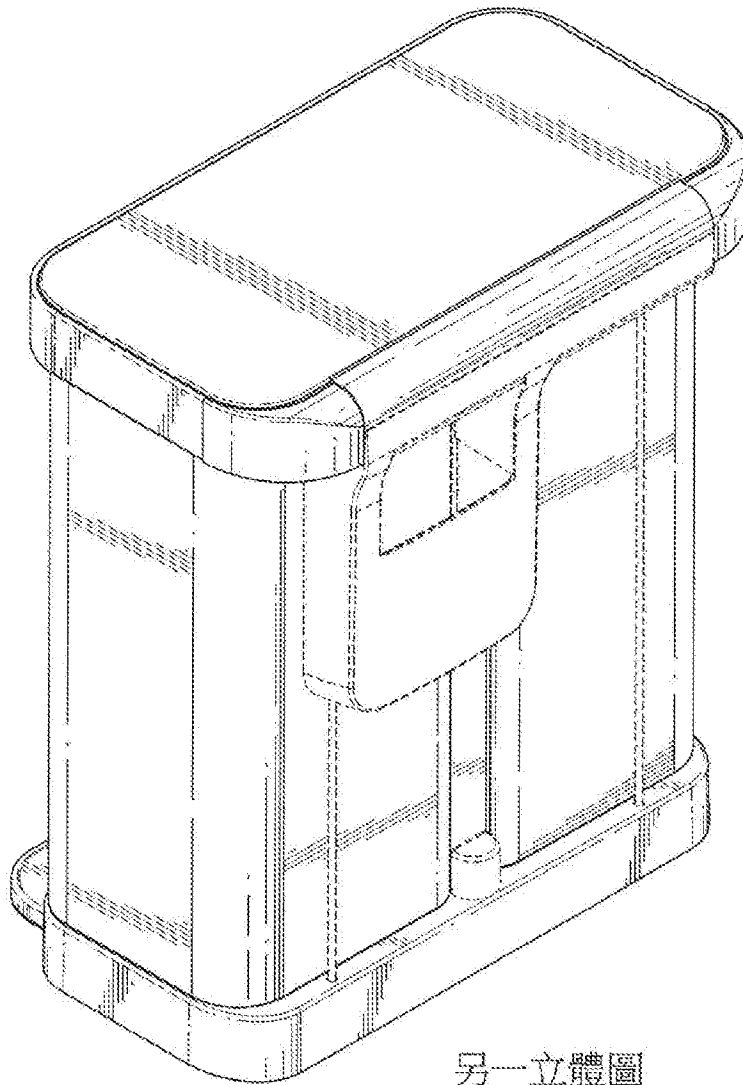
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立體圖

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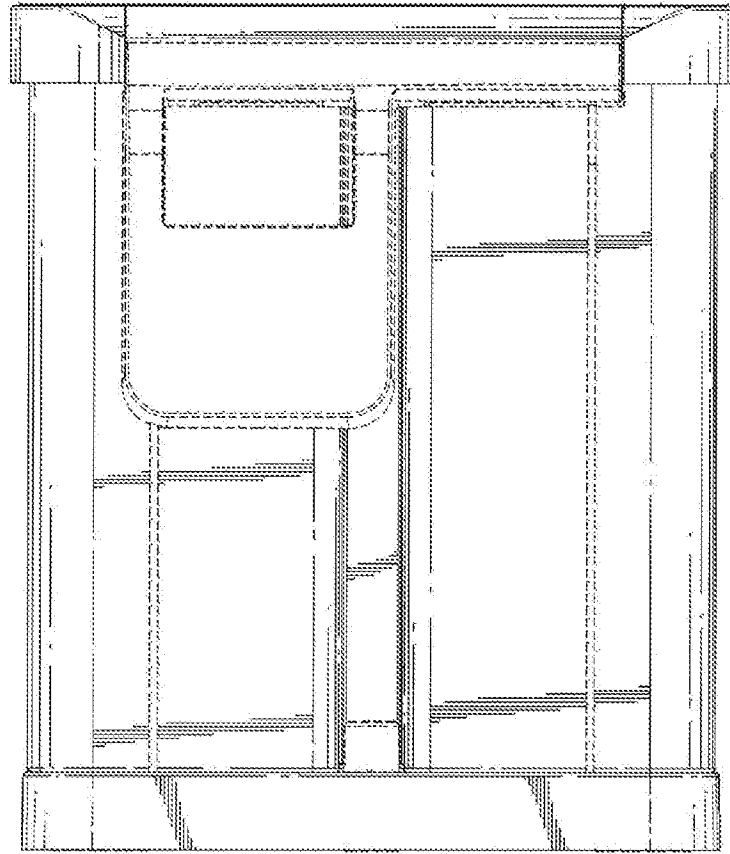
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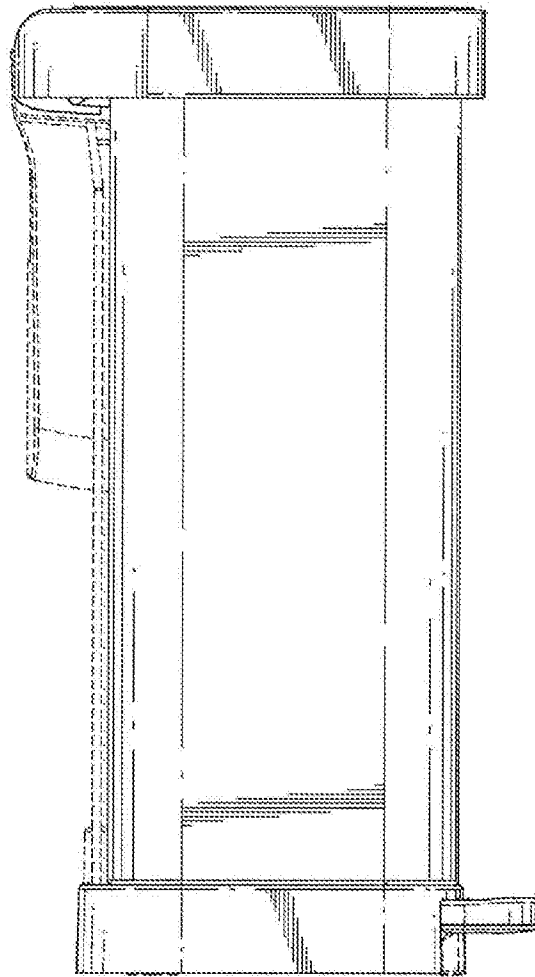
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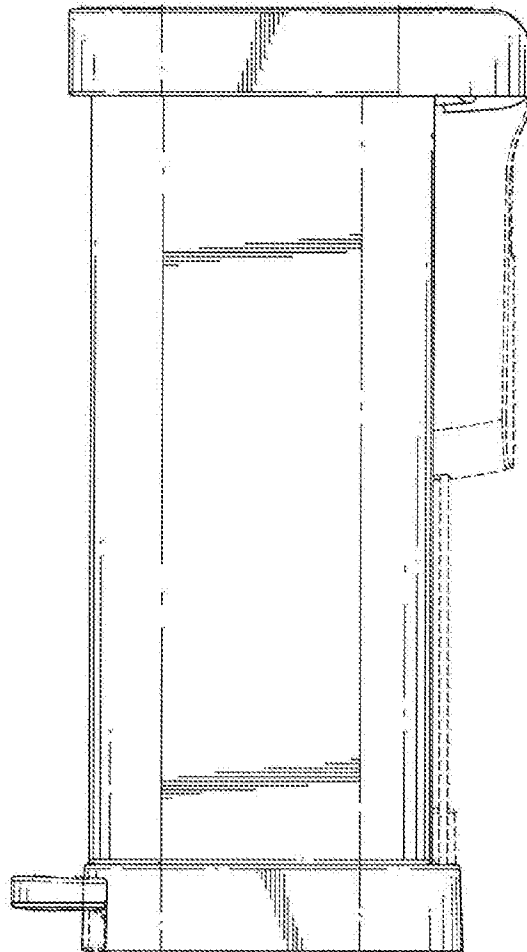
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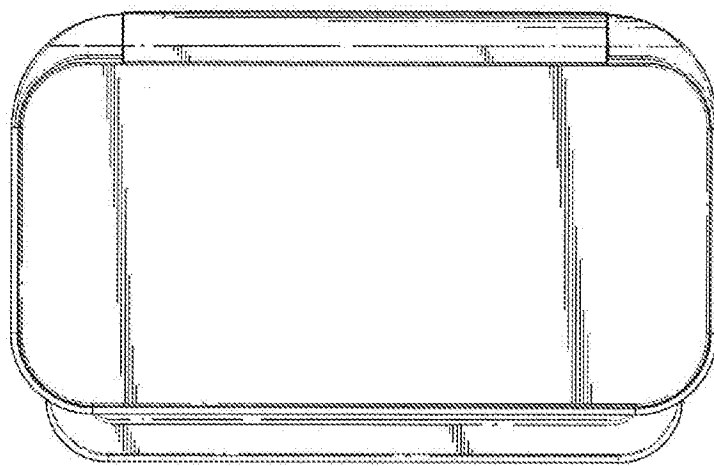
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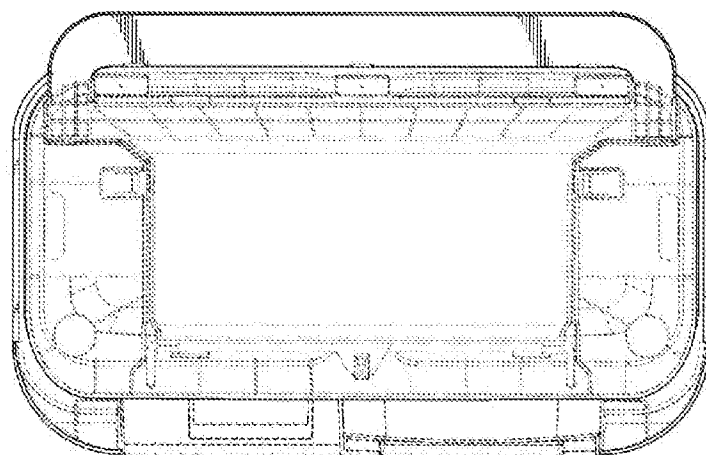


右側視圖

(8)



俯視圖



仰視圖

Electronic Acknowledgement Receipt

EFS ID:	31524739
Application Number:	15783370
International Application Number:	
Confirmation Number:	6434
Title of Invention:	TRASH CAN ASSEMBLY
First Named Inventor/Applicant Name:	Frank Yang
Customer Number:	20995
Filer:	Jason R. Swartz/Linh Do
Filer Authorized By:	Jason R. Swartz
Attorney Docket Number:	SHUMAN.122C1
Receipt Date:	17-JAN-2018
Filing Date:	13-OCT-2017
Time Stamp:	14:30:41
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no
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File Listing:

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	Document Description		Start	End	
	Transmittal Letter		1	2	
	Information Disclosure Statement (IDS) Form (SB08)		3	28	
Warnings:					
Information:					
2	Foreign Reference	EP3042864A1_wAbstract.pdf	2862338	no	21
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VOLUME DISTRIBUTORS, Ex. 1002					

Information:	
Total Files Size (in bytes):	8674233
<p>This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.</p> <p><u>New Applications Under 35 U.S.C. 111</u> If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.</p> <p><u>National Stage of an International Application under 35 U.S.C. 371</u> If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.</p> <p><u>New International Application Filed with the USPTO as a Receiving Office</u> If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.</p>	

INFORMATION DISCLOSURE STATEMENT

First Inventor :	Frank Yang
App. No. :	15/783,370
Filed :	October 13, 2017
For :	TRASH CAN ASSEMBLY
Examiner :	Kevin Charles Castillo
Art Unit :	3781
Conf. No. :	6434

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

References and Listing

An Information Disclosure Statement (IDS) listing references is provided herewith. To the extent that anything in the IDS or the listed references could be construed as a disclaimer of any subject matter supported by the present application, Applicant hereby rescinds and retracts such disclaimer. Some foreign references may also include English abstracts and/or machine translations, but no representation is made as to their accuracy. If the Examiner would like additional information regarding these references, the Examiner is invited to contact the undersigned.

Copies of Certain References Not Being Provided (37 CFR 1.98(d))

At least the foreign and/or non-patent literature documents listed as Cite Nos. 516-633 and 640-645 are of record in U.S. Patent Application No. 13/787,638, filed March 6, 2013, now U.S. Patent No. 9,790,025 (Citation No. 258) which is the parent of this continuation application, and is relied upon for an earlier filing date under 35 USC 120. Pursuant to 37 CFR 1.98(d), copies of the references listed as Cite Nos. 516-633 and 640-645 are not being submitted.

Certain Commonly-Owned References

The owner of the above-indicated application is also believed to own the patent application publications listed as at least Cite Nos. 179, 194, 196, 198, 200, 201, 204, 207, 212, 214, 216, 220, 221, 225-227, 229, 230, 233, 234, 236, 238-240, 244-247, 251-259, 278, 283, 284, 286, 287, 289, 293, 294, 297-299, 303, 309, 310, 312, 314, 322, 323, 325-328, 331, 335,

Application No.: 15/783370
Filing Date: October 13, 2017

336, 339, 342-344, 346, 347, 351, 354, 356, 358, 360-363, 365, 368-371, 374, 375, 378, 380, 382, 383, 386, 390, 391, 393, 397-401, 433, 438, 439, 446, 472, 481, 483, 495, 504, 505, 508-515. Those patents and applications, or their associated prosecution histories, may contain office actions, attorney arguments, allowed claims or indications of allowable subject matter, and cited references that the Examiner may consider to be relevant and/or material to the present application. In addition, as some of these applications may still be pending, future office actions, attorney arguments, notices of allowance, and cited references may be included in these files. Applicant understands that the Examiner has access to these files on a continuing basis, including any present or future office actions, attorney arguments, allowed claims or indications of allowable subject matter, or cited references listed therein, for review if the Examiner feels these documents are in any way relevant or material to the examination of the present claims. If, however, the Examiner does not have access to these files or would like Applicant to provide copies of any office actions, attorney arguments, allowed claims or indication of allowable subject matter, or cited references, the Examiner is requested to contact the undersigned at the below-listed phone number or at the address of record.

Timing of Disclosure

This Information Disclosure Statement is being filed before the receipt of a First Office Action on the merits, and presumably no fee is required. If a First Office Action on the merits was mailed before the mailing date of this Statement, the Commissioner is authorized to charge the fee set forth in 37 CFR 1.17(p) to Deposit Account No. 11-1410.

Respectfully submitted,

KNOBBE, MARTENS, OLSON & BEAR, LLP

Dated: January 17, 2018

By: Jason R. Swartz/

Jason Swartz

Registration No. 64,420

Registered Practitioner

Customer No. 20995

(949) 760-0404

27387708

INFORMATION DISCLOSURE STATEMENT BY APPLICANT	Application No.	15/783,370
	Filing Date	October 13, 2017
	First Named Inventor	Frank Yang
	Art Unit	3781
(Multiple sheets used when necessary)	Examiner	Kevin Charles Castillo
SHEET 1 OF 1	Attorney Docket No.	SHUMAN.122C1

U.S. PATENT DOCUMENTS					
Examiner Initials	Cite No.	Document Number Number - Kind Code (if known) Example: 1,234,567 B1	Publication Date MM-DD-YYYY	Name	Pages, Columns, Lines Where Relevant Passages or Relevant Figures Appear
	1	D307,344	04-17-1990	Massonnet	
	2	D332,852	01-26-1993	Delmerico	
	3	D709,662	07-22-2014	Yang et al.	
	4	D770,121	10-25-2016	Chen	
	5	D773,769	12-06-2016	Chen	
	6	D787,828	05-30-2017	Thoma et al.	
	7	D790,145	06-20-2017	Chen	
	8	2015/0251849	09-10-2015	Yang et al.	
	9	2017/0127669	05-11-2017	Yang et al.	

FOREIGN PATENT DOCUMENTS						
Examiner Initials	Cite No.	Foreign Patent Document Country Code-Number-Kind Code Example: JP 1234567 A1	Publication Date MM-DD-YYYY	Name	Pages, Columns, Lines Where Relevant Passages or Relevant Figures Appear	T ¹

NON PATENT LITERATURE DOCUMENTS			
Examiner Initials	Cite No.	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T ¹

27538745

Examiner Signature	Date Considered
*Examiner: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.	

T¹ - Place a check mark in this area when an English language translation is attached.

Electronic Acknowledgement Receipt

EFS ID:	31732048
Application Number:	15783370
International Application Number:	
Confirmation Number:	6434
Title of Invention:	TRASH CAN ASSEMBLY
First Named Inventor/Applicant Name:	Frank Yang
Customer Number:	20995
Filer:	Jason R. Swartz/Linh Do
Filer Authorized By:	Jason R. Swartz
Attorney Docket Number:	SHUMAN.122C1
Receipt Date:	07-FEB-2018
Filing Date:	13-OCT-2017
Time Stamp:	18:51:36
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no
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File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
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	Multipart Description/PDF files in .zip description		
	Document Description	Start	End
	Transmittal Letter	1	2
	Information Disclosure Statement (IDS) Form (SB08)	3	3
Warnings:			
Information:			
Total Files Size (in bytes):		45159	
<p>This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.</p> <p><u>New Applications Under 35 U.S.C. 111</u> If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.</p> <p><u>National Stage of an International Application under 35 U.S.C. 371</u> If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.</p> <p><u>New International Application Filed with the USPTO as a Receiving Office</u> If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.</p>			

INFORMATION DISCLOSURE STATEMENT

First Inventor :	Frank Yang
App. No. :	15/783,370
Filed :	October 13, 2017
For :	TRASH CAN ASSEMBLY
Examiner :	Kevin Charles Castillo
Art Unit :	3781
Conf. No. :	6434

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

References and Listing

An Information Disclosure Statement (IDS) listing references is provided herewith. To the extent that anything in the IDS or the listed references could be construed as a disclaimer of any subject matter supported by the present application, Applicant hereby rescinds and retracts such disclaimer.

Certain Commonly-Owned References

The owner of the above-indicated application is also believed to own the patent and patent application publications listed as at least Cite Nos. 3, 8, and 9. That these files, or their associated prosecution histories, may contain office actions, attorney arguments, allowed claims or indications of allowable subject matter, and cited references that the Examiner may consider to be relevant and/or material to the present application. In addition, as some the applications may still be pending, future office actions, attorney arguments, notices of allowance, and cited references may be included in these files. Applicant understands that the Examiner has access to these files on a continuing basis, including any present or future office actions, attorney arguments, allowed claims or indications of allowable subject matter, or cited references listed therein, for review if the Examiner feels these documents are in any way relevant or material to the examination of the present claims. If, however, the Examiner does not have access to these files or would like Applicant to provide copies of any office actions, attorney arguments, allowed

Application No.: 15/783,370
Filing Date: October 13, 2017

claims or indication of allowable subject matter, or cited references, the Examiner is requested to contact the undersigned at the below-listed phone number or at the address of record.

Timing of Disclosure

This IDS is being filed before the receipt of a First Office Action on the merits, and presumably no fee is required. If a First Office Action on the merits was mailed before the mailing date of this Statement, the Commissioner is authorized to charge the fee set forth in 37 CFR 1.17(p) to Deposit Account No. 11-1410.

Respectfully submitted,
KNOBBE, MARTENS, OLSON & BEAR, LLP

Dated: February 7, 2018

By: Jason R. Swartz/
Jason Swartz
Registration No. 64,420
Registered Practitioner
Customer No. 20995
(949) 760-0404

27538752

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

First Inventor	:	Frank Yang
App. No.	:	15/783,370
Filed	:	October 13, 2017
For	:	TRASH CAN ASSEMBLY
Examiner	:	Kevin Charles Castillo
Art Unit	:	3781
Conf. No.	:	6434

PRELIMINARY AMENDMENT**Mail Stop Amendment**

Commissioner for Patents

P.O. Box 1450

Alexandria, VA 22313-1450

Dear Commissioner:

Before examining the above-identified application on the merits, please enter the following:

Amendments to the Claims, which begin on page 2; and

Remarks, which begin on page 6.

AMENDMENTS TO THE CLAIMS

1-20. (Canceled)

21. (Currently Amended) A trash can assembly comprising:

a body component comprising a lower base, an upper opening, and a front upper edge; and

a lid assembly configured to couple with the body component, the lid assembly comprising:

a lid configured to rotate, relative to the body, between a lower position and an upper position;

a power transmission device ~~motor~~ configured to drive the lid between the lower position and the upper position; and

a trim member configured to rotate between a closed position and an open position, wherein:

in the closed position, a front of the trim member is adjacent the front upper edge of the body component; and

in the open position, the front of the trim member is spaced apart from and vertically higher than the front upper edge of the body component; and

a retaining mechanism configured to maintain the trim member in the open position against the force of gravity.

22. (Currently Amended) The trash can assembly of Claim [[21]] 42, wherein the lid assembly further comprises an electronic sensor, wherein the motor is configured to be activated in response to a signal from the electronic sensor, and wherein the trash can assembly is configured such that the electronic sensor is disabled when the trim member is in the open position.

23. (Previously Presented) The trash can assembly of Claim 21, wherein the retaining mechanism comprises a detent.

24. (Previously Presented) The trash can assembly of Claim 21, wherein, in the open position, the trim member is at an acute angle with respect to a longitudinal axis of the body component.

25. (Previously Presented) The trash can assembly of Claim 21, wherein the retaining mechanism comprises a cam structure and a recess, the cam structure configured to be received in the recess when the trim member is in the open position.

26. (Previously Presented) The trash can assembly of Claim 25, wherein:
the retaining mechanism further comprises a ramp; and
the trash can assembly is configured such that, as the trim member rotates from the closed position to the open position, the cam structure slides along the ramp and engages into the recess.

27. (Previously Presented) The trash can assembly of Claim 26, wherein:
the cam structure is positioned on the trim ring; and
the ramp is positioned on a backside enclosure that is positioned on an exterior surface of a rear wall of the trash can assembly.

28. (Previously Presented) The trash can assembly of Claim 21, wherein:
a majority of the periphery of the lid is received in the trim member when the trim member is in the closed position and the lid is in the lower position; and
a majority of the periphery of the lid is positioned outside of the trim member when the trim member is in the closed position and the lid is in the upper position.

29. (Previously Presented) The trash can assembly of Claim 21, wherein, when the lid is in the lower position and the trim ring is in the closed position, the entire periphery of the lid is received in the trim ring.

30. (Previously Presented) The trash can assembly of Claim 21, wherein the trim member and the lid are configured to rotate about the same axis.

31. (Previously Presented) The trash can assembly of Claim 21, wherein the trim member further comprises an exterior wall that extends:
generally parallel with a longitudinal axis of the trash can;
downward beyond an upper lip of the body component; and
radially outward from the upper lip of the body component.

32. (Previously Presented) The trash can assembly of Claim 21, wherein the body component has a rectangular shape.

33. (Previously Presented) The trash can assembly of Claim 21, wherein at least a front half of the body portion has a generally cylindrical shape.

34. (Canceled)

35. (Previously Presented) A method of mounting a trash bag, the method comprising:

obtaining a trash can assembly comprising a body component, lid, and trim ring, the lid and trim ring each configured to rotate relative to the body component;

rotating the trim ring from a closed position to an open position;

engaging the trim ring with a retaining mechanism;

maintaining the trim ring in the open position against the force of gravity with the retaining mechanism, the trim ring being held in the open position at an acute angle with respect to a longitudinal axis of the body component;

inserting a trash bag into the trash can assembly;

positioning an upper portion of the trash bag over an upper edge of the body component;

disengaging the trim ring from the retaining mechanism; and

rotating the trim ring from the open position to the closed position.

36. (Previously Presented) The method of Claim 35, further comprising visually obscuring, with the trim ring, the upper portion of the trash bag and the upper edge of the body component.

37. (Previously Presented) The method of Claim 35, further comprising rotating the lid from a lower position to an upper position, rotating the lid from the upper position the lower position, and receiving the entire periphery of the lid in the trim ring.

38. (Previously Presented) The method of Claim 35, wherein rotating the trim ring from the closed position to the open position further comprises rotating the trim ring about the same axis as the lid.

39. (Previously Presented) The method of Claim 35, wherein engaging the trim ring with the retaining mechanism comprises engaging the trim ring with a detent.

40. (Previously Presented) The method of Claim 35, wherein engaging the trim ring with the retaining mechanism comprises sliding a cam structure along a ramp in a first direction, and receiving the cam structure in a recess.

41. (Previously Presented) The method of Claim 40, wherein disengaging the trim ring with the retaining mechanism comprises removing the cam structure from the recess, and sliding the cam structure along the ramp in a second direction that is generally opposite the first direction.

42. (New) The trash can assembly of Claim 21, wherein the power transmission device comprises a motor.

43. (New) The trash can assembly of Claim 21, wherein the power transmission device comprises a footpedal.

44. (New) The trash can assembly of Claim 21, wherein the body component further comprises an internal liner configured to support a trash bag.

Application No.: 15/783,370
Filing Date: October 13, 2017

REMARKS

Before examination on the merits, please enter this Preliminary Amendment. As indicated above, Applicant has amended Claims 1 and 2, has added Claims 42 and 43, and has canceled Claim 34 without prejudice or disclaimer. Accordingly, Claims 1-33 and 35-43 are pending.

Although this communication may include alterations to the claims, Applicant is not conceding that the previously pending claims were not patentable. Rather, any alterations or characterizations are being made to facilitate expeditious prosecution of this application. Applicant reserves the right to pursue at a later date any previously pending or other broader or narrower claims that capture any subject matter supported by the present disclosure, including subject matter found to be specifically disclaimed herein or by any prior prosecution. Accordingly, reviewers of this or any parent, child, or related prosecution history shall not reasonably infer that Applicant has made any disclaimers or disavowals of any subject matter supported by this application.

Please charge any additional fees, including any fees for additional extension of time, or credit overpayment to Deposit Account No. 11-1410.

Respectfully submitted,

KNOBBE, MARTENS, OLSON & BEAR, LLP

Dated: March 6, 2018

By: Jason R. Swartz/

Jason Swartz
Registration No. 64,420
Attorney of Record
Customer No. 20995
(949) 760-0404

27723470

Electronic Patent Application Fee Transmittal				
Application Number:		15783370		
Filing Date:		13-Oct-2017		
Title of Invention:		TRASH CAN ASSEMBLY		
First Named Inventor/Applicant Name:		Frank Yang		
Filer:		Jason R. Swartz/Linh Do		
Attorney Docket Number:		SHUMAN.122C1		
Filed as Small Entity				
Filing Fees for Utility under 35 USC 111(a)				
Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Basic Filing:				
Pages:				
Claims:				
CLAIMS IN EXCESS OF 20	2202	2	50	100
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Extension-of-Time:				
Miscellaneous:				
Total in USD (\$)				100

Electronic Acknowledgement Receipt

EFS ID:	31969393
Application Number:	15783370
International Application Number:	
Confirmation Number:	6434
Title of Invention:	TRASH CAN ASSEMBLY
First Named Inventor/Applicant Name:	Frank Yang
Customer Number:	20995
Filer:	Jason R. Swartz/Christina Graul
Filer Authorized By:	Jason R. Swartz
Attorney Docket Number:	SHUMAN.122C1
Receipt Date:	06-MAR-2018
Filing Date:	13-OCT-2017
Time Stamp:	13:46:57
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	CARD
Payment was successfully received in RAM	\$ 100
RAM confirmation Number	030618INTEFSW13472700
Deposit Account	
Authorized User	

The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:

File Listing:					
Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1		Prelim_Amendment.pdf	34354	yes	6
			b8dc38a20159e298ddfacc17e21dc18ad0045849e		
	Multipart Description/PDF files in .zip description				
	Document Description		Start	End	
	Preliminary Amendment		1	1	
	Claims		2	5	
	Applicant Arguments/Remarks Made in an Amendment		6	6	
Warnings:					
Information:					
2	Fee Worksheet (SB06)	fee-info.pdf	30168	no	2
			810fd2b09db629375fe17a97e585127d49cb4a7c		
Warnings:					
Information:					
Total Files Size (in bytes):			64522		

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New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

Electronic Acknowledgement Receipt

EFS ID:	31969393
Application Number:	15783370
International Application Number:	
Confirmation Number:	6434
Title of Invention:	TRASH CAN ASSEMBLY
First Named Inventor/Applicant Name:	Frank Yang
Customer Number:	20995
Filer:	Jason R. Swartz/Christina Graul
Filer Authorized By:	Jason R. Swartz
Attorney Docket Number:	SHUMAN.122C1
Receipt Date:	06-MAR-2018
Filing Date:	13-OCT-2017
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Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	CARD
Payment was successfully received in RAM	\$ 100
RAM confirmation Number	030618INTEFSW13472700
Deposit Account	
Authorized User	

The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:

File Listing:					
Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1		Prelim_Amendment.pdf	34354	yes	6
			b8dc38a20159e298ddfac17e21dc18ad0045849e		
	Multipart Description/PDF files in .zip description				
	Document Description		Start	End	
	Preliminary Amendment		1	1	
	Claims		2	5	
	Applicant Arguments/Remarks Made in an Amendment		6	6	
Warnings:					
Information:					
2	Fee Worksheet (SB06)	fee-info.pdf	30168	no	2
			810fd2b09db629375fe17a97e585127d49cb4a7c		
Warnings:					
Information:					
Total Files Size (in bytes):			64522		

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If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

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PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875	Application or Docket Number 15/783,370	Filing Date 10/13/2017	☐ To be Mailed
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ENTITY: ☐ LARGE ☒ SMALL ☐ MICRO**APPLICATION AS FILED – PART I**

(Column 1)

(Column 2)

FOR	NUMBER FILED	NUMBER EXTRA		RATE (\$)	FEE (\$)
☐ BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A		N/A	
☐ SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A		N/A	
☐ EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A		N/A	
TOTAL CLAIMS (37 CFR 1.16(i))	minus 20 =	*		X \$ =	
INDEPENDENT CLAIMS (37 CFR 1.16(h))	minus 3 =	*		X \$ =	
☐ APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is \$310 (\$155 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).				
☐ MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))					
* If the difference in column 1 is less than zero, enter "0" in column 2.				TOTAL	

APPLICATION AS AMENDED – PART II

(Column 1)

(Column 2)

(Column 3)

	03/06/2018	CLAIMS REMAINING AFTER AMENDMENT	Minus	HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA		RATE (\$)	ADDITIONAL FEE (\$)
AMENDMENT	Total (37 CFR 1.16(i))	* 21	Minus	** 21	= 0		X \$50 =	0
	Independent (37 CFR 1.16(h))	* 2	Minus	***3	= 0		X \$230 =	0
	☐ Application Size Fee (37 CFR 1.16(s))							
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							
	TOTAL ADD'L FEE							0

(Column 1)

(Column 2)

(Column 3)

		CLAIMS REMAINING AFTER AMENDMENT	Minus	HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA		RATE (\$)	ADDITIONAL FEE (\$)
AMENDMENT	Total (37 CFR 1.16(i))	*	Minus	**	=		X \$ =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=		X \$ =	
	☐ Application Size Fee (37 CFR 1.16(s))							
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							
	TOTAL ADD'L FEE							

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.

** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".

*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".

The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.

LDRC
ANDREW JAMES JR

This collection of information is required by 37 CFR 1.16. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

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APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
15/783,370	10/13/2017	Frank Yang	SHUMAN.122C1

CONFIRMATION NO. 6434

PUBLICATION NOTICE



OC00000098579299

20995
KNOBBE MARTENS OLSON & BEAR LLP
2040 MAIN STREET
FOURTEENTH FLOOR
IRVINE, CA 92614

Title:TRASH CAN ASSEMBLY

Publication No.US-2018-0093827-A1

Publication Date:04/05/2018

NOTICE OF PUBLICATION OF APPLICATION

The above-identified application will be electronically published as a patent application publication pursuant to 37 CFR 1.211, et seq. The patent application publication number and publication date are set forth above.

The publication may be accessed through the USPTO's publically available Searchable Databases via the Internet at www.uspto.gov. The direct link to access the publication is currently <http://www.uspto.gov/patft/>.

The publication process established by the Office does not provide for mailing a copy of the publication to applicant. A copy of the publication may be obtained from the Office upon payment of the appropriate fee set forth in 37 CFR 1.19(a)(1). Orders for copies of patent application publications are handled by the USPTO's Public Records Division. The Public Records Division can be reached by telephone at (571) 272-3150 or (800) 972-6382, by facsimile at (571) 273-3250, by mail addressed to the United States Patent and Trademark Office, Public Records Division, Alexandria, VA 22313-1450 or via the Internet.

In addition, information on the status of the application, including the mailing date of Office actions and the dates of receipt of correspondence filed in the Office, may also be accessed via the Internet through the Patent Electronic Business Center at www.uspto.gov using the public side of the Patent Application Information and Retrieval (PAIR) system. The direct link to access this status information is currently <https://portal.uspto.gov/pair/PublicPair>. Prior to publication, such status information is confidential and may only be obtained by applicant using the private side of PAIR.

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Office of Data Management, Application Assistance Unit (571) 272-4000, or (571) 272-4200, or 1-888-786-0101



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NOTICE OF ALLOWANCE AND FEE(S) DUE

20995 7590 10/17/2019
KNOBBE MARTENS OLSON & BEAR LLP
2040 MAIN STREET
FOURTEENTH FLOOR
IRVINE, CA 92614

EXAMINER

LUO, DAVID S

ART UNIT

PAPER NUMBER

2837

DATE MAILED: 10/17/2019

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
15/783,370	10/13/2017	Frank Yang	SHUMAN.122C1	6434

TITLE OF INVENTION: TRASH CAN ASSEMBLY

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	SMALL	\$500	\$0.00	\$0.00	\$500	01/17/2020

THE APPLICATION IDENTIFIED ABOVE HAS BEEN EXAMINED AND IS ALLOWED FOR ISSUANCE AS A PATENT. PROSECUTION ON THE MERITS IS CLOSED. THIS NOTICE OF ALLOWANCE IS NOT A GRANT OF PATENT RIGHTS. THIS APPLICATION IS SUBJECT TO WITHDRAWAL FROM ISSUE AT THE INITIATIVE OF THE OFFICE OR UPON PETITION BY THE APPLICANT. SEE 37 CFR 1.313 AND MPEP 1308.

THE ISSUE FEE AND PUBLICATION FEE (IF REQUIRED) MUST BE PAID WITHIN THREE MONTHS FROM THE MAILING DATE OF THIS NOTICE OR THIS APPLICATION SHALL BE REGARDED AS ABANDONED. THIS STATUTORY PERIOD CANNOT BE EXTENDED. SEE 35 U.S.C. 151. THE ISSUE FEE DUE INDICATED ABOVE DOES NOT REFLECT A CREDIT FOR ANY PREVIOUSLY PAID ISSUE FEE IN THIS APPLICATION. IF AN ISSUE FEE HAS PREVIOUSLY BEEN PAID IN THIS APPLICATION (AS SHOWN ABOVE), THE RETURN OF PART B OF THIS FORM WILL BE CONSIDERED A REQUEST TO REAPPLY THE PREVIOUSLY PAID ISSUE FEE TOWARD THE ISSUE FEE NOW DUE.

HOW TO REPLY TO THIS NOTICE:

I. Review the ENTITY STATUS shown above. If the ENTITY STATUS is shown as SMALL or MICRO, verify whether entitlement to that entity status still applies.

If the ENTITY STATUS is the same as shown above, pay the TOTAL FEE(S) DUE shown above.

If the ENTITY STATUS is changed from that shown above, on PART B - FEE(S) TRANSMITTAL, complete section number 5 titled "Change in Entity Status (from status indicated above)".

For purposes of this notice, small entity fees are 1/2 the amount of undiscounted fees, and micro entity fees are 1/2 the amount of small entity fees.

II. PART B - FEE(S) TRANSMITTAL, or its equivalent, must be completed and returned to the United States Patent and Trademark Office (USPTO) with your ISSUE FEE and PUBLICATION FEE (if required). If you are charging the fee(s) to your deposit account, section "4b" of Part B - Fee(s) Transmittal should be completed and an extra copy of the form should be submitted. If an equivalent of Part B is filed, a request to reapply a previously paid issue fee must be clearly made, and delays in processing may occur due to the difficulty in recognizing the paper as an equivalent of Part B.

III. All communications regarding this application must give the application number. Please direct all communications prior to issuance to Mail Stop ISSUE FEE unless advised to the contrary.

IMPORTANT REMINDER: Maintenance fees are due in utility patents issuing on applications filed on or after Dec. 12, 1980. It is patentee's responsibility to ensure timely payment of maintenance fees when due. More information is available at www.uspto.gov/PatentMaintenanceFees.

PART B - FEE(S) TRANSMITTAL

Complete and send this form, together with applicable fee(s), by mail or fax, or via EFS-Web.

By mail, send to: Mail Stop ISSUE FEE
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

By fax, send to: (571)-273-2885

INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

CURRENT CORRESPONDENCE ADDRESS (Note: Use Block 1 for any change of address)

Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

20995 7590 10/17/2019
KNOBBE MARTENS OLSON & BEAR LLP
2040 MAIN STREET
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IRVINE, CA 92614

Certificate of Mailing or Transmission

I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being transmitted to the USPTO via EFS-Web or by facsimile to (571) 273-2885, on the date below.

(Typed or printed name)
(Signature)
(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
15/783,370	10/13/2017	Frank Yang	SHUMAN.122C1	6434

TITLE OF INVENTION: TRASH CAN ASSEMBLY

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	SMALL	\$500	\$0.00	\$0.00	\$500	01/17/2020

EXAMINER	ART UNIT	CLASS-SUBCLASS
LUO, DAVID S	2837	318-003000

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).

☐ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.

☐ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-09 or more recent) attached. **Use of a Customer Number is required.**

2. For printing on the patent front page, list

(1) The names of up to 3 registered patent attorneys or agents OR, alternatively,

1 _____

(2) The name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed.

2 _____

3 _____

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document must have been previously recorded, or filed for recordation, as set forth in 37 CFR 3.11 and 37 CFR 3.81(a). Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE

(B) RESIDENCE: (CITY and STATE OR COUNTRY)

Please check the appropriate assignee category or categories (will not be printed on the patent) : ☐ Individual ☐ Corporation or other private group entity ☐ Government

4a. Fees submitted: ☐ Issue Fee ☐ Publication Fee (if required) ☐ Advance Order - # of Copies _____

4b. Method of Payment: (Please first reapply any previously paid fee shown above)

☐ Electronic Payment via EFS-Web ☐ Enclosed check ☐ Non-electronic payment by credit card (Attach form PTO-2038)

☐ The Director is hereby authorized to charge the required fee(s), any deficiency, or credit any overpayment to Deposit Account No. _____

5. Change in Entity Status (from status indicated above)

☐ Applicant certifying micro entity status. See 37 CFR 1.29

☐ Applicant asserting small entity status. See 37 CFR 1.27

☐ Applicant changing to regular undiscounted fee status.

NOTE: Absent a valid certification of Micro Entity Status (see forms PTO/SB/15A and 15B), issue fee payment in the micro entity amount will not be accepted at the risk of application abandonment.

NOTE: If the application was previously under micro entity status, checking this box will be taken to be a notification of loss of entitlement to micro entity status.

NOTE: Checking this box will be taken to be a notification of loss of entitlement to small or micro entity status, as applicable.

NOTE: This form must be signed in accordance with 37 CFR 1.31 and 1.33. See 37 CFR 1.4 for signature requirements and certifications.

Authorized Signature _____

Date _____

Typed or printed name _____

Registration No. _____



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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
15/783,370	10/13/2017	Frank Yang	SHUMAN.122C1	6434
20995	7590	10/17/2019	EXAMINER	
KNOBBE MARTENS OLSON & BEAR LLP			LUO, DAVID S	
2040 MAIN STREET			ART UNIT	
FOURTEENTH FLOOR			PAPER NUMBER	
IRVINE, CA 92614			2837	
DATE MAILED: 10/17/2019				

Determination of Patent Term Adjustment under 35 U.S.C. 154 (b) (Applications filed on or after May 29, 2000)

The Office has discontinued providing a Patent Term Adjustment (PTA) calculation with the Notice of Allowance.

Section 1(h)(2) of the AIA Technical Corrections Act amended 35 U.S.C. 154(b)(3)(B)(i) to eliminate the requirement that the Office provide a patent term adjustment determination with the notice of allowance. See Revisions to Patent Term Adjustment, 78 Fed. Reg. 19416, 19417 (Apr. 1, 2013). Therefore, the Office is no longer providing an initial patent term adjustment determination with the notice of allowance. The Office will continue to provide a patent term adjustment determination with the Issue Notification Letter that is mailed to applicant approximately three weeks prior to the issue date of the patent, and will include the patent term adjustment on the patent. Any request for reconsideration of the patent term adjustment determination (or reinstatement of patent term adjustment) should follow the process outlined in 37 CFR 1.705.

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Customer Service Center of the Office of Patent Publication at 1-(888)-786-0101 or (571)-272-4200.

OMB Clearance and PRA Burden Statement for PTOL-85 Part B

The Paperwork Reduction Act (PRA) of 1995 requires Federal agencies to obtain Office of Management and Budget approval before requesting most types of information from the public. When OMB approves an agency request to collect information from the public, OMB (i) provides a valid OMB Control Number and expiration date for the agency to display on the instrument that will be used to collect the information and (ii) requires the agency to inform the public about the OMB Control Number's legal significance in accordance with 5 CFR 1320.5(b).

The information collected by PTOL-85 Part B is required by 37 CFR 1.311. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 30 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, Virginia 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450. Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

Privacy Act Statement

The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C. 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether disclosure of these records is required by the Freedom of Information Act.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspection, or a patent. VOLUME DISTRIBUTORS, INC. v. SIMPLIPLY, INC., IPR2024-00050
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation. Page 227 of 521

Notice of Allowability	Application No. 15/783,370	Applicant(s) Yang et al.	
	Examiner DAVID S LUO	Art Unit 2837	AIA (FITF) Status No

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 3/6/2018.
☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on _____.

2. ☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.

3. ☒ The allowed claim(s) is/are 21-33 and 35-44. As a result of the allowed claim(s), you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see http://www.uspto.gov/patents/init_events/pph/index.jsp or send an inquiry to PPHfeedback@uspto.gov.

4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

Certified copies:

a) ☐ All b) ☐ Some *c) ☐ None of the:

1. ☐ Certified copies of the priority documents have been received.

2. ☐ Certified copies of the priority documents have been received in Application No. _____.

3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.

Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).

6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☒ Notice of References Cited (PTO-892) 2. ☒ Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date <u>1/17/2018, 2/7/2018</u> . 3. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material _____. 4. ☐ Interview Summary (PTO-413), Paper No./Mail Date. _____.	5. ☐ Examiner's Amendment/Comment 6. ☒ Examiner's Statement of Reasons for Allowance 7. ☐ Other _____.
--	--

/DAVID LUO/
Primary Examiner, Art Unit 2837

DETAILED ACTION

1. The present application, filed on or after March 16, 2013, is being examined under the first inventor to file provisions of the AIA.
2. The specification, the abstract and the drawings are all acceptable.

Allowable Subject Matter

3. Claims 21-33, 45-44 are allowed.
4. The following is a statement of reasons for the indication of allowable subject matter.

The non-obvious features are:

As per independent claim 21: A trim member configured to rotate between a closed position and an open position, wherein: in the closed position, a front of the trim member is adjacent the front upper edge of the body component; and in the open position, the front of the trim member is spaced apart from and vertically higher than the front upper edge of the body component; and a retaining mechanism configured to maintain the trim member in the open position against the force of gravity including remaining claim limitations.

As per independent claim 35: Maintaining the trim ring in the open position against the force of gravity with the retaining mechanism, the trim ring being held in the open position at an acute angle with respect to a longitudinal axis of the body component; positioning an upper portion of the trash bag over an upper edge of the body component; disengaging the trim ring from the retaining mechanism; and rotating the trim ring from the open position to the closed position including remaining claim limitations.

Conclusion

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

USPN 8,678,219 to Wang discloses a trash can control system.

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to David S. Luo whose telephone number is (571)270-5251. The examiner can normally be reached on M-F 9AM-6PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Eduardo Colon-Santana can be reached on (571)272-2060. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/DAVID LUO/
Primary Examiner, Art Unit 2837

Notice of References Cited	Application/Control No. 15/783,370		Applicant(s)/Patent Under Reexamination Yang et al.	
	Examiner DAVID S LUO		Art Unit 2837	Page 1 of 1

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	CPC Classification	US Classification
*	A	US-8678219-B1	03-2014	Wang; Xin	B65F1/163	220/211
	B					
	C					
	D					
	E					
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	G					
	H					
	I					
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	M					

FOREIGN PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	CPC Classification
	N					
	O					
	P					
	Q					
	R					
	S					
	T					

NON-PATENT DOCUMENTS

*		Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages)
	U	
	V	
	W	
	X	

*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)
Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.

Issue Classification 	Application/Control No. 15/783,370	Applicant(s)/Patent Under Reexamination Yang et al.
	Examiner DAVID S LUO	Art Unit 2837

CPC						
Symbol				Type	Version	
B65F	/	1	/	1638	F	2013-01-01
B65F	/	1	/	1646	I	2013-01-01
B65F	/	1	/	04	I	2013-01-01
B65F	/	1	/	06	I	2013-01-01
B65F	/	1	/	068	I	2013-01-01

CPC Combination Sets							
Symbol				Type	Set	Ranking	Version
	/		/				

NONE	Total Claims Allowed:					
(Assistant Examiner)	(Date)	23				
/DAVID LUO/ Primary Examiner, Art Unit 2837 (Primary Examiner)	09 October 2019 (Date)	<table><tr><td>O.G. Print Claim(s)</td><td>O.G. Print Figure</td></tr><tr><td>1</td><td>2</td></tr></table>	O.G. Print Claim(s)	O.G. Print Figure	1	2
O.G. Print Claim(s)	O.G. Print Figure					
1	2					

Issue Classification 	Application/Control No. 15/783,370	Applicant(s)/Patent Under Reexamination Yang et al.
	Examiner DAVID S LUO	Art Unit 2837

INTERNATIONAL CLASSIFICATION			
CLAIMED			
B65F1/16	/	1	/ 16
B65F1/04	/	1	/ 04
B65F1/06	/	1	/ 06
NON-CLAIMED			
	/		/

US ORIGINAL CLASSIFICATION	
CLASS	SUBCLASS
318	3

CROSS REFERENCES(S)						
CLASS	SUBCLASS (ONE SUBCLASS PER BLOCK)					
318	34					

NONE		Total Claims Allowed:	
(Assistant Examiner)	(Date)	23	
/DAVID LUO/ Primary Examiner, Art Unit 2837 (Primary Examiner)	09 October 2019 (Date)	O.G. Print Claim(s) 1	O.G. Print Figure 2

Issue Classification 	Application/Control No. 15/783,370	Applicant(s)/Patent Under Reexamination Yang et al.
	Examiner DAVID S LUO	Art Unit 2837

☐ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47

CLAIMS															
Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original
	1		10		19	7	28	19	37						
	2		11		20	8	29	20	38						
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	9		18	6	27	18	36								

NONE	Total Claims Allowed:					
(Assistant Examiner)	(Date)	23				
/DAVID LUO/ Primary Examiner, Art Unit 2837 (Primary Examiner)	09 October 2019 (Date)	<table><tr><td>O.G. Print Claim(s)</td><td>O.G. Print Figure</td></tr><tr><td>1</td><td>2</td></tr></table>	O.G. Print Claim(s)	O.G. Print Figure	1	2
O.G. Print Claim(s)	O.G. Print Figure					
1	2					

<i>Search Notes</i> 	Application/Control No. 15/783,370	Applicant(s)/Patent Under Reexamination Yang et al.
	Examiner DAVID S LUO	Art Unit 2837

CPC - Searched*		
Symbol	Date	Examiner
B65F 1/1638	10/09/2019	Luo

CPC Combination Sets - Searched*		
Symbol	Date	Examiner

US Classification - Searched*			
Class	Subclass	Date	Examiner
318	3, 34	10/09/2019	Luo

* See search history printout included with this form or the SEARCH NOTES box below to determine the scope of the search.

Search Notes		
Search Notes	Date	Examiner
East Search History attached and Inventor Searches done	10/09/2019	Luo

Interference Search			
US Class/CPC Symbol	US Subclass/CPC Group	Date	Examiner
318	3	10/09/2019	Luo
B65F	1/1638	10/09/2019	Luo

/DAVID LUO/ Primary Examiner, Art Unit 2837	VOLUME DISTRIBUTORS, Ex. 1002 PR2019-00060
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BIB DATA SHEET

CONFIRMATION NO. 6434

SERIAL NUMBER	FILING or 371(c) DATE	CLASS	GROUP ART UNIT	ATTORNEY DOCKET NO.	
15/783,370	10/13/2017	318	2837	SHUMAN.122C1	
APPLICANTS simplehuman, LLC, Torrance, CA;					
INVENTORS Frank Yang, Rancho Palos Verdes, CA; David Wolbert, Redondo Beach, CA; Joseph Sandor, Newport Beach, CA; Kenneth Yen, Torrance, CA; Orlando Cardenas, Laguna Niguel, CA; Michael James Basha, Brisbane, CA; Christopher B. Fruhauf, San Anselmo, CA;					
** CONTINUING DATA ***** This application is a CON of 13/787,638 03/06/2013 PAT 9790025 which claims benefit of 61/609,233 03/09/2012					
** FOREIGN APPLICATIONS *****					
** IF REQUIRED, FOREIGN FILING LICENSE GRANTED ** ** SMALL ENTITY ** 10/26/2017					
Foreign Priority claimed ☐ Yes ☒ No 35 USC 119(a-d) conditions met ☐ Yes ☒ No Verified and /DAVID S LUO/ Acknowledged Examiner's Signature	☐ Met after Allowance Initials	STATE OR COUNTRY CA	SHEETS DRAWINGS 13	TOTAL CLAIMS 21	INDEPENDENT CLAIMS 2
ADDRESS KNOBBE MARTENS OLSON & BEAR LLP 2040 MAIN STREET FOURTEENTH FLOOR IRVINE, CA 92614 UNITED STATES					
TITLE TRASH CAN ASSEMBLY					
FILING FEE RECEIVED 940	FEES: Authority has been given in Paper No. _____ to charge/credit DEPOSIT ACCOUNT No. _____ for following:		☐ All Fees ☐ 1.16 Fees (Filing) ☐ 1.17 Fees (Processing Ext. of time) ☐ 1.18 Fees (Issue) ☐ Other _____ ☐ Credit		

EAST Search History

EAST Search History (Prior Art)

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S4	37	(Wolbert near3 David).inv.	US-PGPUB; USPAT; USOCR; EPO; JPO	OR	OFF	2019/10/08 15:12
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S9	56	(Fruhauf near3 Christopher).inv.	US-PGPUB;	OR	OFF	2019/10/08 15:14

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"D587874"	"D593271"	"D599074"
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S13	6	("D766998" "D771344" "D773145" "D793642" "D798016" "D804133").PN.	US- PGPUB; USPAT	OR	OFF	2019/10/08 16:01
S14	7	trash near6 can and lid near6 (rotat\$4 turn\$4 spin\$4) and trim near6 (rotat\$4 turn\$4 spin\$4) with (open closed) near6 position	US- PGPUB; USPAT; USOCR; EPO; JPO	OR	OFF	2019/10/08 18:39
S15	2	trash near6 can and lid near6 (rotat\$4 turn\$4 spin\$4) and trim near6 (rotat\$4 turn\$4 spin\$4) with (open closed) near6 position	USPAT; USOCR; EPO; JPO	OR	OFF	2019/10/08 18:40
S16	5	trash near6 can and lid near6 (rotat\$4 turn\$4 spin\$4) and trim near6 (rotat\$4 turn\$4 spin\$4) and (open closed) near6 position	USPAT; USOCR; EPO; JPO	OR	OFF	2019/10/08 18:57
S17	5	S16 AND ((B65F1/06 OR B65F1/1646 OR B65F1/04 OR B65F1/062 OR B65F1/1607 OR B65F1/1638 OR B65F2250/11 OR B65F2250/114 OR B65F2210/168 OR B65F2210/181 OR B65F2210/1815 OR B65F2250/111 OR B65F2250/112 OR B65F1/068 OR B65F1/1473 OR B65F1/1615 OR B65F1/163 OR B65F2001/1661 OR B65F2001/1669 OR B65F2210/108 OR B65F2210/128 OR B65F2220/12).CPC.)	USPAT; USOCR; EPO; JPO	OR	OFF	2019/10/08 18:59
S18	3	S16 AND ((E05F15/73 OR E05F2015/763 OR E05F2015/765 OR Y10T29/49002).CPC.)	USPAT; USOCR; EPO; JPO	OR	OFF	2019/10/08 18:59
S19	1	S16 AND ((E05Y2900/602 OR G01D5/16 OR G01J1/4204 OR G10L15/08 OR G10L15/22 OR G10L2015/088 OR G10L2015/223 OR G10L25/51).CPC.)	USPAT; USOCR; EPO; JPO	OR	OFF	2019/10/08 18:59
S20	127	("0185746" "0242254" "1028898" "1138939" "1169606" "1333051" "1481922" "1552693" "1682093" "1714332" "2063507" "2470271" "2561118" "2663529" "2665632" "2850025" "3229846" "4334629" "4561563").PN. OR ("5170904").URPN.	US- PGPUB; USPAT; USOCR	OR	OFF	2019/10/08 19:05

EAST Search History (Interference)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
S21	14	trash near6 can and lid near6 (rotat\$4 turn\$4 spin\$4) and trim near6 (rotat\$4 turn\$4 spin\$4) and (open closed) near6 position	US- PGPUB; USPAT	OR	OFF	2019/10/08 19:11
S22	1226	B65F1/06.cpc.	US-	OR	OFF	2019/10/08

				PGPUB; USPAT			19:11
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10/ 9/ 2019 12:06:07 PM
C:\ Users\ dluo\ Documents\ EAST\ Workspaces\ 15-783370.wsp

PTO/SB/08 Equivalent

INFORMATION DISCLOSURE STATEMENT BY APPLICANT	Application No.	15/783,370
	Filing Date	October 13, 2017
	First Named Inventor	Frank Yang
	Art Unit	3781
(Multiple sheets used when necessary)	Examiner	Kevin Charles Castillo
SHEET 1 OF 1	Attorney Docket No.	SHUMAN.122C1

U.S. PATENT DOCUMENTS					
Examiner Initials	Cite No.	Document Number Number - Kind Code (if known) Example: 1,234,567 B1	Publication Date MM-DD-YYYY	Name	Pages, Columns, Lines Where Relevant Passages or Relevant Figures Appear
	1	D307,344	04-17-1990	Massonnet	
	2	D332,852	01-26-1993	Delmerico	
	3	D709,662	07-22-2014	Yang et al.	
	4	D770,121	10-25-2016	Chen	
	5	D773,769	12-06-2016	Chen	
	6	D787,828	05-30-2017	Thoma et al.	
	7	D790,145	06-20-2017	Chen	
	8	2015/0251849	09-10-2015	Yang et al.	
	9	2017/0127669	05-11-2017	Yang et al.	

FOREIGN PATENT DOCUMENTS						
Examiner Initials	Cite No.	Foreign Patent Document Country Code-Number-Kind Code Example: JP 1234567 A1	Publication Date MM-DD-YYYY	Name	Pages, Columns, Lines Where Relevant Passages or Relevant Figures Appear	T ¹

NON PATENT LITERATURE DOCUMENTS			
Examiner Initials	Cite No.	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T ¹

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Examiner Signature /DAVID LUO/	Date Considered 10/08/2019
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	First Named Inventor	Frank Yang
	Art Unit	3781
(Multiple sheets used when necessary)	Examiner	Kevin Charles Castillo
SHEET 1 OF 26	Attorney Docket No.	SHUMAN.122C1

U.S. PATENT DOCUMENTS					
Examiner Initials	Cite No.	Document Number Number - Kind Code (if known) Example: 1,234,567 B1	Publication Date MM-DD-YYYY	Name	Pages, Columns, Lines Where Relevant Passages or Relevant Figures Appear
	1	830,182	09-04-1906	Skov	
	2	1,426,211	08-15-1922	Pausin	
	3	1,461,253	07-10-1923	Owen	
	4	1,754,802	04-15-1930	Raster	
	5	1,820,555	08-25-1931	Buschman	
	6	1,891,651	12-20-1932	Padelford et al.	
	7	1,922,729	08-15-1933	Geibel	
	8	1,980,938	11-13-1934	Geibel	
	9	2,308,326	01-12-1943	Calcagno	
	10	2,457,274	12-28-1948	Rifken	
	11	2,759,625	08-21-1956	Ritter	
	12	2,796,309	06-18-1957	Taylor	
	13	2,888,307	05-26-1959	Graves et al.	
	14	2,946,474	07-26-1960	Knapp	
	15	3,008,604	11-14-1961	Garner	
	16	3,023,922	03-06-1962	Arrington et al.	
	17	3,137,408	06-16-1964	Taylor	
	18	3,300,082	01-24-1967	Patterson	
	19	3,392,825	07-16-1968	Gale et al.	
	20	3,451,453	06-24-1969	Heck	
	21	3,654,534	04-04-1972	Fischer	
	22	3,800,503	04-02-1974	Maki	
	23	3,820,200	06-28-1974	Myers	
	24	3,825,150	07-23-1974	Taylor	
	25	3,825,215	07-23-1974	Borglum	
	26	3,886,425	05-27-1975	Weiss	
	27	3,888,406	06-10-1975	Nippes	
	28	3,891,115	06-24-1975	Ono	
	29	4,014,457	03-29-1977	Hodge	

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	Filing Date	October 13, 2017
	First Named Inventor	Frank Yang
	Art Unit	3781
(Multiple sheets used when necessary)	Examiner	Kevin Charles Castillo
SHEET 2 OF 26	Attorney Docket No.	SHUMAN.122C1

U.S. PATENT DOCUMENTS					
Examiner Initials	Cite No.	Document Number Number - Kind Code (if known) Example: 1,234,567 B1	Publication Date MM-DD-YYYY	Name	Pages, Columns, Lines Where Relevant Passages or Relevant Figures Appear
	30	4,027,774	06-07-1977	Cote	
	31	4,081,105	03-28-1978	Dagonnet et al.	
	32	4,189,808	02-26-1980	Brown	
	33	4,200,197	04-29-1980	Meyer et al.	
	34	4,217,616	08-12-1980	Jessup	
	35	4,303,174	12-01-1981	Anderson	
	36	4,320,851	03-23-1982	Montoya	
	37	4,349,123	09-14-1982	Yang	
	38	4,357,740	11-09-1982	Brown	
	39	4,416,197	11-22-1983	Kehl	
	40	4,417,669	11-29-1983	Knowles et al.	
	41	4,457,483	07-03-1984	Gagne	
	42	4,535,911	08-20-1985	Goulter	
	43	4,570,304	02-18-1986	Montreuil et al.	
	44	4,576,310	03-18-1986	Isgar et al.	
	45	4,609,117	09-02-1986	Pamment	
	46	4,630,332	12-23-1986	Bisbing	
	47	4,630,752	12-23-1986	DeMars	
	48	4,664,347	05-12-1987	Brown et al.	
	49	4,697,312	10-06-1987	Freyer	
	50	4,711,161	12-08-1987	Swin et al.	
	51	4,729,490	03-08-1988	Ziegenbein	
	52	4,753,367	06-28-1988	Miller et al.	
	53	4,763,808	08-16-1988	Guhl et al.	
	54	4,765,548	08-23-1988	Sing	
	55	4,765,579	08-23-1988	Robbins, III et al.	
	56	4,785,964	11-22-1988	Miller et al.	
	57	4,792,039	12-20-1988	Dayton	
	58	4,794,973	01-31-1989	Perisic	

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SHEET 3 OF 26	Attorney Docket No.	SHUMAN.122C1

U.S. PATENT DOCUMENTS					
Examiner Initials	Cite No.	Document Number Number - Kind Code (if known) Example: 1,234,567 B1	Publication Date MM-DD-YYYY	Name	Pages, Columns, Lines Where Relevant Passages or Relevant Figures Appear
	59	4,813,592	03-21-1989	Stolzman	
	60	4,823,979	04-25-1989	Clark, Jr.	
	61	4,834,260	05-30-1989	Auten	
	62	4,863,053	09-05-1989	Oberg	
	63	4,867,339	09-16-1989	Hahn	
	64	4,869,391	09-26-1989	Farrington	
	65	4,884,717	12-05-1989	Bussard et al.	
	66	4,888,532	12-19-1989	Josson	
	67	4,892,223	01-09-1990	DeMent	
	68	4,892,224	01-09-1990	Graham	
	69	4,913,308	04-03-1990	Culbertson	
	70	4,915,347	04-10-1990	Iqbal et al.	
	71	4,918,568	04-17-1990	Stone et al.	
	72	4,923,087	05-08-1990	Burrows	
	73	4,944,419	07-31-1990	Chandler	
	74	4,948,004	08-14-1990	Chich	
	75	4,964,523	10-23-1990	Bieltvedt et al.	
	76	4,972,966	11-27-1990	Craft, Jr.	
	77	4,996,467	02-26-1991	Day	
	78	5,031,793	07-16-1991	Chen et al.	
	79	5,048,903	09-17-1991	Loblein	
	80	5,054,724	10-08-1991	Hutcheson	
	81	5,065,272	11-12-1991	Owen et al.	
	82	5,065,891	11-19-1991	Casey	
	83	5,076,462	12-31-1991	Perrone	
	84	5,090,585	02-25-1992	Power	
	85	5,090,785	02-25-1992	Stamp	
	86	5,100,087	03-21-1992	Ashby	
	87	5,111,958	05-12-1992	Witthoeft	

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U.S. PATENT DOCUMENTS					
Examiner Initials	Cite No.	Document Number Number - Kind Code (if known) Example: 1,234,567 B1	Publication Date MM-DD-YYYY	Name	Pages, Columns, Lines Where Relevant Passages or Relevant Figures Appear
	88	5,147,055	09-15-1992	Samson et al.	
	89	5,156,290	10-20-1992	Rodrigues	
	90	5,170,904	12-15-1992	Neuhaus	
	91	5,174,462	12-29-1992	Hames	
	92	5,213,272	05-25-1993	Gallagher et al.	
	93	5,222,704	06-23-1993	Light	
	94	5,226,558	07-13-1993	Whitney et al.	
	95	5,230,525	07-27-1993	Delmerico et al.	
	96	5,242,074	09-07-1993	Conaway et al.	
	97	5,249,693	10-05-1993	Gillispie et al.	
	98	5,261,553	11-16-1993	Mueller et al.	
	99	5,265,511	11-30-1993	Itzov	
	100	5,295,607	03-22-1994	Chang	
	101	5,305,916	04-26-1994	Suzuki et al.	
	102	5,314,151	05-24-1994	Carter-Mann	
	103	5,322,179	06-21-1994	Ting	
	104	5,329,212	07-12-1994	Feigleson	
	105	5,348,222	09-20-1994	Patey	
	106	5,353,950	10-11-1994	Taylor et al.	
	107	5,372,272	12-13-1994	Jennings	
	108	5,381,588	01-17-1995	Nelson	
	109	5,385,258	01-31-1995	Sutherlin	
	110	5,390,818	02-21-1995	LaBuda	
	111	5,404,621	04-11-1995	Heinke	
	112	5,407,089	04-18-1995	Bird et al.	
	113	5,419,452	05-30-1995	Mueller et al.	
	114	5,471,708	12-05-1995	Lynch	
	115	5,474,201	12-12-1995	Liu	
	116	5,501,358	03-26-1996	Hobday	

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	Filing Date	October 13, 2017
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	Art Unit	3781
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U.S. PATENT DOCUMENTS					
Examiner Initials	Cite No.	Document Number Number - Kind Code (if known) Example: 1,234,567 B1	Publication Date MM-DD-YYYY	Name	Pages, Columns, Lines Where Relevant Passages or Relevant Figures Appear
	117	5,520,067	05-28-1996	Gaba	
	118	5,520,303	05-28-1996	Bernstein et al.	
	119	5,531,348	07-02-1996	Baker et al.	
	120	5,535,913	07-16-1996	Asbach et al.	
	121	5,558,254	09-24-1996	Anderson et al.	
	122	5,560,283	10-01-1996	Hannig	
	123	5,584,412	12-17-1996	Wang	
	124	5,611,507	03-18-1997	Smith	
	125	5,628,424	05-13-1997	Gola	
	126	5,632,401	05-27-1997	Hurd	
	127	5,636,416	06-10-1997	Anderson	
	128	5,636,761	06-10-1997	Diamond et al.	
	129	5,644,111	07-01-1997	Cerny et al.	
	130	5,645,186	07-08-1997	Powers et al.	
	131	5,650,680	07-22-1997	Chula	
	132	5,662,235	09-02-1997	Nieto	
	133	5,671,847	09-30-1997	Pedersen et al.	
	134	5,690,247	11-25-1997	Boover	
	135	5,695,088	12-09-1997	Kasbohm	
	136	5,699,929	12-23-1997	Ouno	
	137	5,704,511	01-06-1998	Kellams	
	138	5,724,837	03-16-1998	Shin	
	139	5,730,312	03-24-1998	Hung	
	140	5,732,845	03-31-1998	Armaly, Jr.	
	141	5,735,495	04-07-1998	Kubota	
	142	5,738,239	04-14-1998	Triglia	
	143	5,770,935	06-23-1998	Smith et al.	
	144	5,799,909	09-01-1998	Ziegler	
	145	5,816,431	10-06-1998	Giannopoulos	

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SHEET 6 OF 26	Attorney Docket No.	SHUMAN.122C1

U.S. PATENT DOCUMENTS					
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	146	5,816,640	10-06-1998	Nishimura	
	147	5,873,643	02-23-1999	Burgess, Jr. et al.	
	148	5,881,896	03-16-1999	Presnell et al.	
	149	5,881,901	03-16-1999	Hampton	
	150	5,884,237	03-16-1999	Kanki et al.	
	151	5,887,748	03-30-1999	Nguyen	
	152	5,961,105	10-05-1999	Ehrnsberger et al.	
	153	5,967,392	10-19-1999	Niemi et al.	
	154	5,987,708	11-23-1999	Newton	
	155	6,000,569	12-14-1999	Liu	
	156	6,010,024	01-04-2000	Wang	
	157	6,024,238	02-15-2000	Jaros	
	158	6,036,050	03-14-2000	Ruane	
	159	6,102,239	08-15-2000	Wien	
	160	6,105,859	08-22-2000	Stafford	
	161	6,123,215	09-26-2000	Windle	
	162	6,126,031	10-03-2000	Reason	
	163	6,129,233	10-10-2000	Schiller	
	164	6,131,861	10-17-2000	Fortier, Jr. et al.	
	165	6,209,744	04-03-2001	Gill	
	166	6,211,637	04-03-2001	Studer	
	167	6,234,339	05-22-2001	Thomas	
	168	6,250,492	06-26-2001	Verbeek	
	169	6,286,706	09-11-2001	Tucker	
	170	6,328,320	12-11-2001	Walski et al.	
	171	6,345,725	02-12-2002	Lin	
	172	6,364,147	04-02-2002	Meinzinger et al.	
	173	6,386,386	05-14-2002	George	
	174	6,390,321	05-21-2002	Wang	

Examiner Signature /DAVID LUO/	Date Considered 10/08/2019
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	First Named Inventor	Frank Yang
	Art Unit	3781
(Multiple sheets used when necessary)	Examiner	Kevin Charles Castillo
SHEET 7 OF 26	Attorney Docket No.	SHUMAN.122C1

U.S. PATENT DOCUMENTS					
Examiner Initials	Cite No.	Document Number Number - Kind Code (if known) Example: 1,234,567 B1	Publication Date MM-DD-YYYY	Name	Pages, Columns, Lines Where Relevant Passages or Relevant Figures Appear
	175	6,401,958	06-11-2002	Foss et al.	
	176	6,519,130	02-11-2003	Breslow	
	177	6,557,716	05-06-2003	Chan	
	178	6,596,983	07-22-2003	Brent	
	179	6,626,316 and its entire file history	09-30-2003	Yang	
	180	6,626,317	09-30-2003	Pfiefer et al.	
	181	6,632,064	10-14-2003	Walker et al.	
	182	6,659,407	12-09-2003	Asaro	
	183	6,681,950	01-27-2004	Miller, Jr. et al.	
	184	6,758,366	07-06-2004	Bourgund et al.	
	185	6,812,655	11-02-2004	Wang et al.	
	186	6,814,249	11-09-2004	Lin	
	187	6,837,393	01-04-2005	Kuo	
	188	6,857,538	02-22-2005	Lin	
	189	6,859,005	02-22-2005	Boliver	
	190	6,866,826	03-15-2005	Moore et al.	
	191	6,883,676	04-26-2005	Lin	
	192	6,920,994	07-26-2005	Lin	
	193	6,974,948	12-13-2005	Brent	
	194	6,981,606 and its entire file history	01-03-2006	Yang et al.	
	195	7,017,773	03-28-2006	Gruber et al.	
	196	7,044,323 and its entire file history	05-16-2006	Yang	
	197	7,073,677	07-11-2006	Richardson et al.	
	198	7,077,283 and its entire file history	07-18-2006	Yang et al.	
	199	7,080,750	07-25-2006	Wein et al.	
	200	7,086,550 and its entire file history	08-08-2006	Yang et al.	
	201	7,121,421 and its entire file history	10-17-2006	Yang et al.	
	202	7,163,591	01-16-2007	Kim et al.	

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	First Named Inventor	Frank Yang
	Art Unit	3781
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U.S. PATENT DOCUMENTS					
Examiner Initials	Cite No.	Document Number Number - Kind Code (if known) Example: 1,234,567 B1	Publication Date MM-DD-YYYY	Name	Pages, Columns, Lines Where Relevant Passages or Relevant Figures Appear
	203	7,168,591	01-30-2007	Miller	
	204	7,225,943 and its entire file history	06-05-2007	Yang et al.	
	205	7,243,811	07-17-2007	Ramsey	
	206	7,328,842	02-12-2008	Wagner et al.	
	207	7,374,060 and its entire file history	05-20-2008	Yang et al.	
	208	7,395,990	07-08-2008	Stevens	
	209	7,398,913	07-15-2008	McClure	
	210	7,404,499	07-29-2008	Ramsey	
	211	7,438,199	10-21-2008	Tidrick	
	212	7,494,021 and its entire file history (Atty Docket No. SHUMAN.020A)	02-24-2009	Yang et al.	
	213	7,530,578	05-12-2009	Niemeyer et al.	
	214	7,540,396 and its entire file history	06-02-2009	Yang et al.	
	215	7,543,716	06-09-2009	Lin	
	216	7,559,433 and its entire file history	07-14-2009	Yang et al.	
	217	7,607,552	10-27-2009	Efstathiou	
	218	7,614,519	11-10-2009	Krauth et al.	
	219	7,621,420	11-24-2009	Bandoh et al.	
	220	7,656,109 and its entire file history (Atty Docket No. SHUMAN.021CP1)	02-02-2010	Yang et al.	
	221	7,694,838 and its entire file history (Atty Docket No. SHUMAN.080A)	04-13-2010	Yang et al.	
	222	7,703,622	04-27-2010	Bynoe	
	223	7,712,285	05-11-2010	Stravitz et al.	
	224	7,741,801	06-22-2010	Fukuizumi	
	225	7,748,556 and its entire file history (Atty Docket No. SHUMAN.059CP1C1)	07-06-2010	Yang et al.	
	226	7,781,995 and its entire file history (Atty Docket No. SHUMAN.021CP2)	08-24-2010	Yang et al.	

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	227	7,806,285 and its entire file history	10-05-2010	Yang et al.	
	228	7,896,187	03-01-2011	Haibel	
	229	7,922,024 and its entire file history (Atty Docket No. SHUMAN.020CP1)	04-12-2011	Yang et al.	
	230	7,950,543 and its entire file history (Atty Docket No. SHUMAN.083A)	05-31-2011	Yang et al.	
	231	7,992,742	08-09-2011	Kim	
	232	8,006,857	08-30-2011	Lin	
	233	8,074,833 and its entire file history	12-13-2011	Yang et al.	
	234	8,096,445 and its entire file history (Atty Docket No. SHUMAN.042CP2)	01-17-2012	Yang et al.	
	235	8,136,688	03-20-2012	Lee et al.	
	236	8,297,470 and its entire file history (Atty Docket No. SHUMAN.170C1)	10-30-2012	Yang et al.	
	237	8,317,055	11-27-2012	Zawrotny et al.	
	238	8,418,869 and its entire file history (Atty Docket No. SHUMAN.049A)	04-16-2013	Yang et al.	
	239	8,567,630 and its entire file history (Atty Docket No. SHUMAN.049C1)	10-29-2013	Yang et al.	
	240	8,569,980 and its entire file history (Atty Docket No. SHUMAN.061A)	10-29-2013	Yang et al.	
	241	8,575,537	11-05-2013	Yao et al.	
	242	8,672,171	03-18-2014	Wynn et al.	
	243	8,678,219	03-25-2014	Wang et al.	
	244	8,686,676 and its entire file history (Atty Docket No. SHUMAN.100A2)	04-01-2014	Yang et al.	
	245	8,716,969 and its entire file history (Atty Docket No. SHUMAN.100A3)	05-06-2014	Yang et al.	
	246	8,720,728 and its entire file history (Atty Docket No. SHUMAN.066A)	05-13-2014	Yang et al.	

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U.S. PATENT DOCUMENTS					
Examiner Initials	Cite No.	Document Number Number - Kind Code (if known) Example: 1,234,567 B1	Publication Date MM-DD-YYYY	Name	Pages, Columns, Lines Where Relevant Passages or Relevant Figures Appear
	247	8,766,582 and its entire file history (Atty Docket No. SHUMAN.100A)	07-01-2014	Yang et al.	
	248	8,807,378	08-19-2014	Kaberna	
	249	8,807,379	08-19-2014	Hammond	
	250	8,851,316	10-07-2014	Barrett et al.	
	251	8,872,459 and its entire file history (Atty Docket No. SHUMAN.128A)	10-28-2014	Yang et al.	
	252	9,051,093 and its entire file history (Atty. Docket No. SHUMAN.135A)	06-09-2015	Yang et al.	
	253	9,434,538 and its entire file history (Atty. Docket No. SHUMAN.107A)	09-06-2016	Yang et al.	
	254	9,481,515 and its entire file history (Atty. Docket No. SHUMAN.123A)	11-01-2016	Yang et al.	
	255	9,573,759 and its entire file history (Atty. Docket No. SHUMAN.066C1)	02-21-2017	Yang et al.	
	256	9,586,755 and its entire file history (Atty. Docket No. SHUMAN.192A)	03-07-2017	Yang et al.	
	257	9,751,692 and its entire file history (Atty. Docket No. SHUMAN.142A)	09-05-2017	Yang et al.	
	258	9,790,025 and its entire file history (Atty. Docket No. SHUMAN.122A)	10-17-2017	Yang et al.	
	259	9,856,080 and its entire file history (Atty. Docket No. SHUMAN.192P1)	01-02-2018	Yang et al.	
	260	D148,825	02-24-1948	Snider	
	261	D284,320	06-17-1986	Kubic et al.	
	262	D308,272	05-29-1990	Koepsell	
	263	D323,573	01-28-1992	Schneider	
	264	D327,760	07-07-1992	Donnelly	
	265	D329,929	09-29-1992	Knoedler et al.	
	266	D331,097	11-17-1992	Sieren	
	267	D335,562	05-11-1993	Evans	

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Examiner Initials	Cite No.	Document Number Number - Kind Code (if known) Example: 1,234,567 B1	Publication Date MM-DD-YYYY	Name	Pages, Columns, Lines Where Relevant Passages or Relevant Figures Appear
	268	D337,181	07-06-1993	Warman	
	269	D340,333	10-12-1993	Duran et al.	
	270	D377,554	01-21-1997	Adriaansen	
	271	D383,277	09-02-1997	Peters	
	272	D388,922	01-06-1998	Peters	
	273	D389,631	01-20-1998	Peters	
	274	D401,383	11-17-1998	Gish	
	275	D401,719	11-24-1998	Van Leeuwen et al.	
	276	D412,552	08-03-1999	Burrows	
	277	D431,700	10-03-2000	Roudebush	
	278	D435,951 and its entire file history	01-02-2001	Yang et al.	
	279	D445,980	07-31-2001	Tjugum	
	280	D476,456	06-24-2003	Englert et al.	
	281	D481,846	11-04-2003	Lin	
	282	D482,169	11-11-2003	Lin	
	283	D488,604 and its entire file history	04-13-2004	Yang et al.	
	284	D488,903 and its entire file history	04-20-2004	Yang et al.	
	285	D489,503	05-04-2004	Lin	
	286	D489,857 and its entire file history	05-11-2004	Yang et al.	
	287	D490,583 and its entire file history	05-25-2004	Yang et al.	
	288	D490,954	06-01-2004	Brand	
	289	D491,706 and its entire file history	06-15-2004	Yang et al.	
	290	D493,930	08-03-2004	Wang	
	291	D494,723	08-17-2004	Lin	
	292	D499,450	12-07-2004	Goodman et al.	
	293	D503,021 and its entire file history	03-15-2005	Yang et al.	
	294	D507,090 and its entire file history	07-05-2005	Yang et al.	

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	295	D513,445	01-03-2006	Lin	
	296	D517,764	03-21-2006	Wang	
	297	D517,767 and its entire file history	03-21-2006	Yang et al.	
	298	D518,266 and its entire file history	03-28-2006	Yang et al.	
	299	D525,756 and its entire file history	07-25-2006	Yang et al.	
	300	D528,726	09-19-2006	Lin	
	301	D531,499	11-07-2006	Zaidman	
	302	D535,799	01-23-2007	Epps	
	303	D535,800 and its entire file history	01-23-2007	Yang et al.	
	304	D537,223	02-20-2007	Lin	
	305	D537,599	02-27-2007	Lin	
	306	D537,601	02-27-2007	Lin	
	307	D537,999	03-06-2007	Lin	
	308	D538,995	03-20-2007	Lin	
	309	D539,498 and its entire file history	03-27-2007	Yang et al.	
	310	D539,499 and its entire file history	03-27-2007	Yang et al.	
	311	D540,001	04-03-2007	Zimmerman	
	312	D542,001 and its entire file history	05-01-2007	Yang et al.	
	313	D542,995	05-15-2007	Lin	
	314	D543,673 and its entire file history	05-29-2007	Yang et al.	
	315	D544,170	06-05-2007	Lin	
	316	D544,171	06-05-2007	Lin	
	317	D544,671	06-12-2007	Saunders et al.	
	318	D545,024	06-19-2007	Liao	
	319	D547,020	07-17-2007	Chen	
	320	D550,918	09-11-2007	Wang et al.	
	321	D552,319	10-02-2007	Gusdorf	

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U.S. PATENT DOCUMENTS					
Examiner Initials	Cite No.	Document Number Number - Kind Code (if known) Example: 1,234,567 B1	Publication Date MM-DD-YYYY	Name	Pages, Columns, Lines Where Relevant Passages or Relevant Figures Appear
	322	D552,321 and its entire file history	10-02-2007	Yang et al.	
	323	D552,823 and its entire file history (Atty Docket No. SHUMAN.029DA)	10-09-2007	Yang et al.	
	324	D552,824	10-09-2007	Zimmerman	
	325	D552,825 and its entire file history (Atty Docket No. SHUMAN.030DA)	10-09-2007	Yang et al.	
	326	D555,320 and its entire file history	11-13-2007	Yang et al.	
	327	D559,494 and its entire file history (Atty Docket No. SHUMAN.035DA)	01-08-2008	Yang et al.	
	328	D559,495 and its entire file history	01-08-2008	Yang et al.	
	329	D562,522	02-19-2008	Daams	
	330	D564,169	03-11-2008	Wang	
	331	D564,723 and its entire file history	03-18-2008	Yang et al.	
	332	D566,367	04-08-2008	Lin	
	333	D566,369	04-08-2008	Shek	
	334	D566,923	04-15-2008	Lin	
	335	D567,468 and its entire file history	04-22-2008	Yang et al.	
	336	D568,572 and its entire file history	05-06-2008	Yang et al.	
	337	D569,720	05-27-2008	Lablaine	
	338	D571,520	06-17-2008	Lin	
	339	D574,569 and its entire file history	08-05-2008	Yang et al.	
	340	D576,371	09-02-2008	Zimmerman	
	341	D578,265	10-07-2008	Presnell	
	342	D578,266 and its entire file history (Atty Docket No. SHUMAN.047DA)	10-07-2008	Yang et al.	
	343	D578,268 and its entire file history	10-07-2008	Yang et al.	
	344	D578,722 and its entire file history	10-14-2008	Yang et al.	

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U.S. PATENT DOCUMENTS					
Examiner Initials	Cite No.	Document Number Number - Kind Code (if known) Example: 1,234,567 B1	Publication Date MM-DD-YYYY	Name	Pages, Columns, Lines Where Relevant Passages or Relevant Figures Appear
	345	D580,120	11-04-2008	Lin	
	346	D580,613 and its entire file history	11-11-2008	Yang et al.	
	347	D580,615 and its entire file history	11-11-2008	Yang et al.	
	348	D581,622	11-25-2008	Presnell et al.	
	349	D584,470	01-06-2009	Bizzell et al.	
	350	D585,171	01-20-2009	Bizzell et al.	
	351	D585,618 and its entire file history	01-27-2009	Yang et al.	
	352	D586,070	02-03-2009	Lin	
	353	D587,874	03-03-2009	Lin	
	354	D593,271 and its entire file history	05-26-2009	Yang et al.	
	355	D599,074	08-25-2009	Bizzell et al.	
	356	D603,119 and its entire file history	10-27-2009	Yang et al.	
	357	D604,472	11-17-2009	Blanks et al.	
	358	D611,216 and its entire file history (Atty Docket No. SHUMAN.061DA)	03-02-2010	Yang et al.	
	359	D611,217	03-02-2010	Bizzell et al.	
	360	D611,671 and its entire file history	03-09-2010	Yang et al.	
	361	D615,270 and its entire file history	05-04-2010	Yang et al.	
	362	D615,722 and its entire file history (Atty Docket No. SHUMAN.084DA)	05-11-2010	Yang et al.	
	363	D623,817 and its entire file history	09-14-2010	Yang et al.	
	364	D625,068	10-05-2010	Shannon	
	365	D627,533 and its entire file history	11-16-2010	Yang et al.	
	366	D627,944	11-23-2010	Wang et al.	
	367	D629,172	12-14-2010	Liao	
	368	D630,404 and its entire file history	01-04-2011	Yang et al.	

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	369	D631,221 and its entire file history (Atty Docket No. SHUMAN.159DA)	01-18-2011	Yang et al.	
	370	D632,864 and its entire file history	02-15-2011	Yang et al.	
	371	D634,911 and its entire file history (Atty Docket No. SHUMAN.106DA)	03-22-2011	Yang et al.	
	372	D635,319	03-29-2011	Meyerhoffer	
	373	D644,390	08-30-2011	Smeets et al.	
	374	D644,806 and its entire file history (Atty Docket No. SHUMAN.164DA)	09-06-2011	Yang et al.	
	375	D644,807 and its entire file history (Atty Docket No. SHUMAN.165DA)	09-06-2011	Yang et al.	
	376	D649,728	11-29-2011	Campbell	
	377	D655,061	02-28-2012	Scaturro	
	378	D657,108 and its entire file history (Atty Docket No. SHUMAN.113DA)	04-03-2012	Yang et al.	
	379	D657,109	04-03-2012	Liao	
	380	D672,520 and its entire file history (Atty Docket No. SHUMAN.122DA)	12-11-2012	Yang et al.	
	381	D673,750	01-01-2013	Quan	
	382	D675,802 and its entire file history (Atty Docket No. SHUMAN.124DA)	02-05-2013	Yang et al.	
	383	D675,803 and its entire file history (Atty Docket No. SHUMAN.123DA)	02-05-2013	Yang et al.	
	384	D689,255	09-03-2013	Sun Ting Kung et al.	
	385	D704,406	05-06-2014	Kern	
	386	D714,510 and its entire file history (Atty Docket No. SHUMAN.135DA)	09-30-2014	Yang et al.	
	387	D715,575	10-21-2014	Williams et al.	
	388	D716,015	10-21-2014	van de Leest	
	389	D725,860	03-31-2015	Spivey et al.	

Examiner Signature /DAVID LUO/	Date Considered 10/08/2019
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PTO/SB/08 Equivalent

INFORMATION DISCLOSURE STATEMENT BY APPLICANT	Application No.	15/783,370
	Filing Date	October 13, 2017
	First Named Inventor	Frank Yang
	Art Unit	3781
(Multiple sheets used when necessary)	Examiner	Kevin Charles Castillo
SHEET 16 OF 26	Attorney Docket No.	SHUMAN.122C1

U.S. PATENT DOCUMENTS					
Examiner Initials	Cite No.	Document Number Number - Kind Code (if known) Example: 1,234,567 B1	Publication Date MM-DD-YYYY	Name	Pages, Columns, Lines Where Relevant Passages or Relevant Figures Appear
	390	D725,861 and its entire file history (Atty Docket No. SHUMAN.142DA)	03-31-2015	Yang et al.	
	391	D730,008 and its entire file history (Atty Docket No. SHUMAN.153DA)	05-19-2015	Yang et al.	
	392	D755,461	05-03-2016	Wall	
	393	D759,934 and its entire file history (Atty Docket No. SHUMAN.153DA3)	06-21-2016	Yang et al.	
	394	D762,037	07-19-2016	Chen	
	395	D765,937	09-06-2016	Chen	
	396	D766,998	09-20-2016	Kao et al.	
	397	D771,344 and its entire file history (Atty Docket No. SHUMAN.153DA2)	11-08-2016	Yang et al.	
	398	D773,145 and its entire file history (Atty Docket No. SHUMAN.153DA2D1)	11-29-2016	Yang et al.	
	399	D793,642 and its entire file history (Atty Docket No. SHUMAN.204DA)	08-01-2017	Yang et al.	
	400	D798,016 and its entire file history (Atty Docket No. SHUMAN.202DA)	09-19-2017	Yang et al.	
	401	D804,133 and its entire file history (Atty Docket No. SHUMAN.194DA)	09-28-2017	Yang et al.	
	402	2001/0002690	06-07-2001	Rosky	
	403	2001/0020619	09-13-2001	Pfeifer et al.	
	404	2001/0045512	11-29-2001	Brent	
	405	2002/0066736	06-06-2002	Pyles	
	406	2002/0092853	07-18-2002	Wang	
	407	2002/0096523	07-25-2002	Pyles	
	408	2002/0096524	07-25-2002	Hardesty	
	409	2002/0104266	08-02-2002	Ranaudo	
	410	2002/0116924	08-29-2002	Winkelmann et al.	
	411	2003/0089719	05-15-2003	Berger	

Examiner Signature	/DAVID LUO/	Date Considered	10/08/2019
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INFORMATION DISCLOSURE STATEMENT BY APPLICANT	Application No.	15/783,370
	Filing Date	October 13, 2017
	First Named Inventor	Frank Yang
	Art Unit	3781
(Multiple sheets used when necessary)	Examiner	Kevin Charles Castillo
SHEET 17 OF 26	Attorney Docket No.	SHUMAN.122C1

U.S. PATENT DOCUMENTS					
Examiner Initials	Cite No.	Document Number Number - Kind Code (if known) Example: 1,234,567 B1	Publication Date MM-DD-YYYY	Name	Pages, Columns, Lines Where Relevant Passages or Relevant Figures Appear
	412	2003/0102316	06-05-2003	Forest	
	413	2003/0201265	10-30-2003	Lin	
	414	2003/0205979	11-06-2003	Papari et al.	
	415	2003/0230576	12-18-2003	Lin	
	416	2004/0016756	01-29-2004	Lin	
	417	2004/0134924	07-15-2004	Hansen et al.	
	418	2004/0140782	07-22-2004	Okabe et al.	
	419	2004/0164077	08-26-2004	Kuo	
	420	2004/0174268	09-09-2004	Scott et al.	
	421	2004/0175303	09-09-2004	Lin	
	422	2004/0199401	10-07-2004	Wagner	
	423	2004/0200938	10-14-2004	Forlivio	
	424	2004/0206758	10-21-2004	Lin	
	425	2004/0206760	10-21-2004	Gagnebin	
	426	2004/0251746	12-16-2004	Ichimaru et al.	
	427	2005/0017006	01-27-2005	Kuo	
	428	2005/0017010	01-27-2005	Siegel et al.	
	429	2005/0029281	02-10-2005	Westermann et al.	
	430	2005/0129803	06-16-2005	Umeda et al.	
	431	2005/0258177	11-24-2005	Woodson	
	432	2005/0258794	11-24-2005	Fukuizumi	
	433	2006/0027579 and its entire file history	02-09-2006	Yang et al.	
	434	2006/0103086	05-18-2006	Niemeyer et al.	
	435	2006/0138149	06-29-2006	Tracy	
	436	2006/0163257	07-27-2006	Golbert	
	437	2006/0175336	08-10-2006	Wang	
	438	2006/0186121 and its entire file history	08-24-2006	Yang et al.	
	439	2006/0196874 and its entire file history (Atty Docket No. SHUMAN.021A)	09-07-2006	Yang	

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	Filing Date	October 13, 2017
	First Named Inventor	Frank Yang
	Art Unit	3781
(Multiple sheets used when necessary)	Examiner	Kevin Charles Castillo
SHEET 18 OF 26	Attorney Docket No.	SHUMAN.122C1

U.S. PATENT DOCUMENTS					
Examiner Initials	Cite No.	Document Number Number - Kind Code (if known) Example: 1,234,567 B1	Publication Date MM-DD-YYYY	Name	Pages, Columns, Lines Where Relevant Passages or Relevant Figures Appear
	440	2006/0237641	10-26-2006	Moeller et al.	
	441	2006/0249510	11-09-2006	Lin	
	442	2006/0278643	12-14-2006	Chiou	
	443	2007/0034334	02-15-2007	Ramsey et al.	
	444	2007/0045326	03-01-2007	Tramontina et al.	
	445	2007/0090112	04-26-2007	Kalman et al.	
	446	2007/0012699 and its entire file history	01-18-2007	Yang et al.	
	447	2007/0114847	05-24-2007	Ichimaru et al.	
	448	2007/0181579	08-09-2007	Kuo et al.	
	449	2007/0209846	09-13-2007	Wilson	
	450	2007/0215622	09-20-2007	Perez	
	451	2007/0241109	10-18-2007	Lin	
	452	2007/0266637	11-22-2007	McGowan	
	453	2007/0272691	11-29-2007	Wang et al.	
	454	2007/0289972	12-20-2007	Wynn et al.	
	455	2008/0011754	01-17-2008	Ramsey	
	456	2008/0011910	01-17-2008	Ramsey	
	457	2008/0041863	02-21-2008	Forest	
	458	2008/0083756	04-10-2008	Daniels	
	459	2008/0083757	04-10-2008	Parker et al.	
	460	2008/0099274	05-01-2008	Seel	
	461	2008/0128428	06-05-2008	Beckerman	
	462	2008/0164257	07-10-2008	Boll et al.	
	463	2008/0236275	10-02-2008	Breed et al.	
	464	2008/0257889	10-23-2008	Kovacevich et al.	
	465	2008/0257890	10-23-2008	Kovacevich et al.	
	466	2008/0257891	10-23-2008	Kovacevich et al.	
	467	2008/0264948	10-30-2008	Kovacevich et al.	
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PTO/SB/08 Equivalent

INFORMATION DISCLOSURE STATEMENT BY APPLICANT	Application No.	15/783,370
	Filing Date	October 13, 2017
	First Named Inventor	Frank Yang
	Art Unit	3781
(Multiple sheets used when necessary)	Examiner	Kevin Charles Castillo
SHEET 19 OF 26	Attorney Docket No.	SHUMAN.122C1

U.S. PATENT DOCUMENTS					
Examiner Initials	Cite No.	Document Number Number - Kind Code (if known) Example: 1,234,567 B1	Publication Date MM-DD-YYYY	Name	Pages, Columns, Lines Where Relevant Passages or Relevant Figures Appear
	469	2008/0272119	11-06-2008	Efstathiou	
	470	2008/0272127	11-06-2008	Kovacevich et al.	
	471	2009/0071959	03-19-2009	Cheung	
	472	2009/0084788 and its entire file history (Atty Docket No. SHUMAN.034A)	04-02-2009	Yang et al.	
	473	2009/0136341	05-28-2009	Kenyon	
	474	2009/0230131	09-17-2009	McDuffie et al.	
	475	2009/0261105	10-22-2009	Cunningham et al.	
	476	2009/0266836	10-29-2009	Mobley	
	477	2010/0006572	01-14-2010	Chiou	
	478	2010/0084235	04-08-2010	Lu	
	479	2010/0096894	04-22-2010	Fukai	
	480	2010/0122985	05-20-2010	Peters et al.	
	481	2010/0147865 and its entire file history	06-17-2010	Yang et al.	
	482	2010/0170904	07-08-2010	Kalman et al.	
	483	2010/0237074 and its entire file history (Atty Docket No. SHUMAN.084A)	09-23-2010	Yang et al.	
	484	2010/0252557	10-07-2010	Clements	
	485	2010/0294769	11-25-2010	Lee et al.	
	486	2011/0017735	01-27-2011	Wang et al.	
	487	2011/0049149	03-03-2011	Shih	
	488	2011/0056952	03-10-2011	Borowski et al.	
	489	2011/0139781	06-16-2011	Jin et al.	
	490	2011/0272409	11-10-2011	Kasbohm	
	491	2012/0145932	06-14-2012	Yao et al.	
	492	2012/0234849	09-20-2012	Hughes et al.	
	493	2012/0261423	10-18-2012	Zawrotny et al.	
	494	2013/0097809	04-25-2013	Weber et al.	

Examiner Signature	/DAVID LUO/	Date Considered	10/08/2019
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PTO/SB/08 Equivalent

INFORMATION DISCLOSURE STATEMENT BY APPLICANT	Application No.	15/783,370
	Filing Date	October 13, 2017
	First Named Inventor	Frank Yang
	Art Unit	3781
(Multiple sheets used when necessary)	Examiner	Kevin Charles Castillo
SHEET 20 OF 26	Attorney Docket No.	SHUMAN.122C1

U.S. PATENT DOCUMENTS					
Examiner Initials	Cite No.	Document Number Number - Kind Code (if known) Example: 1,234,567 B1	Publication Date MM-DD-YYYY	Name	Pages, Columns, Lines Where Relevant Passages or Relevant Figures Appear
	495	2013/0098913 and its entire file history (Attorney Docket No. SHUMAN.169A)	04-25-2013	Yang et al.	
	496	2013/0105487	05-02-2013	Baik	
	497	2013/0240592	09-19-2013	Woodruff	
	498	2013/0248535	09-26-2013	Wolfe et al.	
	499	2013/0300119	11-14-2013	Anzalon et al.	
	500	2014/0183193	07-03-2014	Hammond et al.	
	501	2014/0238989	08-28-2014	Wang et al.	
	502	2014/0305946	10-16-2014	Han	
	503	2014/0345453	11-27-2014	Oh et al.	
	504	2015/0251849 and its entire file history (Atty. Docket No. SHUMAN.148A)	09-10-2015	Yang et al.	
	505	2015/0259139 and its entire file history (Atty. Docket No. SHUMAN.153A)	09-17-2015	Yang et al.	
	506	2015/0321841	11-12-2015	Salas et al.	
	507	2017/0166167	06-15-2017	Heller et al.	
	508	2017/0253429 and its entire file history (Atty. Docket No. SHUMAN.202A)	09-07-2017	Yang et al.	
	509	Application No. 29/484,903 (Atty. Docket: SHUMAN.142DA)	Filed 03-13-2014	Yang et al.	
	510	Application No. 29/584,385 (Atty. Docket: SHUMAN.213DA)	Filed 11-14-2016	Yang et al.	
	511	Application No. 15/476,285 (Atty. Docket: SHUMAN.136C1)	Filed 03-31-2017	Yang et al.	
	512	Application No. 29/583,627 (Atty. Docket: SHUMAN.223DA)	Filed 06-22-2017	Yang et al.	
	513	Application No. 29/608,587 (Atty. Docket: SHUMAN.194DC1)	Filed 06-22-2017	Yang et al.	
	514	Application No. 29/610,345 (Atty. Docket: SHUMAN.204DC1)	Filed 07-11-2017	Yang et al.	
	515	Application No. 15/809,218 (Atty. Docket: SHUMAN.136C2)	Filed 11-10-2017	Yang et al.	

Examiner Signature	/DAVID LUO/	Date Considered	10/08/2019
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INFORMATION DISCLOSURE STATEMENT BY APPLICANT	Application No.	15/783,370
	Filing Date	October 13, 2017
	First Named Inventor	Frank Yang
	Art Unit	3781
(Multiple sheets used when necessary)	Examiner	Kevin Charles Castillo
SHEET 21 OF 26	Attorney Docket No.	SHUMAN.122C1

FOREIGN PATENT DOCUMENTS						
Examiner Initials	Cite No.	Foreign Patent Document Country Code-Number-Kind Code Example: JP 1234567 A1	Publication Date MM-DD-YYYY	Name	Pages, Columns, Lines Where Relevant Passages or Relevant Figures Appear	T ¹
	516	AU 622536	04-09-1992	Industrial Containers (Aust) Pty Ltd		X
	517	AU 365296	11-18-2015	simplehuman, LLC		
	518	CA 2519295	03-26-2007	North American Range Hoods Inc.		
	519	CA 132181	06-25-2010	simplehuman, LLC		
	520	CA 136938	05-13-2011	simplehuman, LLC		
	521	CA 141819	04-16-2012	simplehuman, LLC		
	522	CA 146601	02-15-2013	simplehuman, LLC		
	523	CA 152797	04-07-2014	simplehuman, LLC		
	524	CA 158595	04-10-2015	simplehuman, LLC		
	525	CA 158685	04-14-2015	simplehuman, LLC		
	526	CA 164264	10-25-2016	simplehuman, LLC		
	527	CA 164265	10-25-2016	simplehuman, LLC		
	528	CA 167073	10-25-2016	simplehuman, LLC		
	529	CN 201105898 Y	08-27-2008	Lin		X-abstract
	530	CN 201512253 U	06-23-2010	Lu		X-abstract
	531	CN 301947175 S	06-06-2012	simplehuman, LLC		
	532	CN 103300590 A	09-18-2013	simplehuman, LLC		
	533	CN 302771721 S	03-26-2014	simplehuman, LLC		
	534	CN 104016030 A	09-03-2014	simplehuman, LLC		
	535	CN 303188855 S	04-29-2015	simplehuman, LLC		
	536	CN 303206241 S	05-13-2015	simplehuman, LLC		
	537	CN 303611394 S	03-09-2016	simplehuman, LLC		
	538	CN 303622098 S	03-23-2016	simplehuman, LLC		
	539	CN 303967208 S	12-14-2016	simplehuman, LLC		
	540	CN 304018339 S	01-25-2017	simplehuman, LLC		
	541	CN 304018340 S	01-25-2017	simplehuman, LLC		
	542	DE 822376	11-26-1951	Quarzlampen GmbH		X

Examiner Signature	/DAVID LUO/	Date Considered	10/08/2019
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INFORMATION DISCLOSURE STATEMENT BY APPLICANT	Application No.	15/783,370
	Filing Date	October 13, 2017
	First Named Inventor	Frank Yang
	Art Unit	3781
(Multiple sheets used when necessary)	Examiner	Kevin Charles Castillo
SHEET 22 OF 26	Attorney Docket No.	SHUMAN.122C1

FOREIGN PATENT DOCUMENTS						
Examiner Initials	Cite No.	Foreign Patent Document Country Code-Number-Kind Code Example: JP 1234567 A1	Publication Date MM-DD-YYYY	Name	Pages, Columns, Lines Where Relevant Passages or Relevant Figures Appear	T ¹
	543	DE 1283741	07-16-1966	Guido Guiremand		X-machine translation
	544	DE 8436939	03-21-1985	Fritz Schaefer GmbH		X-machine translation
	545	DE 1610087	07-20-1950	Tuttlingen		X
	546	DE 9108341	10-17-1991	Gronda et al.		X-machine translation
	547	DE 4225936	02-10-1994	Meseke et al.		X
	548	DE 19525885	03-27-1997	B. Wurster et al.		X-abstract
	549	DE 19617823	11-13-1997	Sitomed GMBH		X-abstract
	550	DE 19809331	05-20-1999	Winkler		X-abstract
	551	DE 29918687	03-23-2000	Fritz et al.		
	552	DE 19933180	01-25-2001	TEM GMBH DE		X-abstract
	553	DE 10148997	04-30-2003	M. Kokemor		X-abstract
	554	DE 20217561	03-25-2004	LEIFHEIT AG		X-abstract
	555	DE 10337806 A1	03-17-2005	Sudhaus GmbH & Co.		X-abstract
	556	EP 0582240	07-31-1993	Meseke et al.		X-abstract
	557	EP 0903305 A1	03-24-1999	David Kennedy (Engineers) Holdings Limited		
	558	EP 0906876 A2	04-07-1999	Nor frost Limited		X
	559	EP 1094017 A1	04-25-2001	Hailo-Werk Rudolf Loh GmbH & Co. KG		X-abstract
	560	EP 1136393 B1	04-14-2004	Hailo-Werk Rudolf Loh GmbH & Co. KG		X-abstract
	561	EP 1361176 A1	11-12-2003	Lin et al.		X
	562	EP 1447342 A2	08-18-2004	Dart Industries Inc.		
	563	EP 1600373 A2	11-30-2005	Jamco Corporation		
	564	EP 1647503 A1	04-19-2006	Brabantia Nederland B.V.		
	565	EP 1918223 A1	05-07-2008	Wang et al.		
	566	EP 1686073 A1	08-02-2006	Lin et al.		X
	567	EP 1700799 B1	08-19-2009	simplehuman, LLC		

Examiner Signature	/DAVID LUO/	Date Considered	10/08/2019
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INFORMATION DISCLOSURE STATEMENT BY APPLICANT	Application No.	15/783,370
	Filing Date	October 13, 2017
	First Named Inventor	Frank Yang
	Art Unit	3781
(Multiple sheets used when necessary)	Examiner	Kevin Charles Castillo
SHEET 23 OF 26	Attorney Docket No.	SHUMAN.122C1

FOREIGN PATENT DOCUMENTS						
Examiner Initials	Cite No.	Foreign Patent Document Country Code-Number-Kind Code Example: JP 1234567 A1	Publication Date MM-DD-YYYY	Name	Pages, Columns, Lines Where Relevant Passages or Relevant Figures Appear	T ¹
	568	EP 2343250 A1	07-13-2011	THN Shong Industrial Co., Ltd.		
	569	EP 2364932 B1	04-27-2016	simplehuman, LLC		
	570	EP 2636611 A1	09-11-2013	simplehuman, LLC		
	571	EP 2636613 B1	03-04-2015	simplehuman, LLC		
	572	EP 2772454 A2	09-03-2014	simplehuman, LLC		
	573	EP 2915763 A1	09-09-2015	simplehuman, LLC		
	574	EP 2918518 A2	09-16-2015	simplehuman, LLC		
	575	EP 3144251 A1	03-22-2014	simplehuman, LLC		
	576	EP 001164826-0001	09-16-2009	simplehuman, LLC		
	577	EP 001232904-0001	10-20-2010	simplehuman, LLC		
	578	EP 001908575-0001	08-25-2011	simplehuman, LLC		
	579	EP 001317416-0001	04-23-2012	simplehuman, LLC		
	580	EP 001317416-0002	04-23-2012	simplehuman, LLC		
	581	EP 001335285-0001	07-18-2012	simplehuman, LLC		
	582	EP 001335293-0001	07-18-2012	simplehuman, LLC		
	583	EP 001381636-001	08-27-2013	simplehuman, LLC		
	584	EP 001381792-0001	08-29-2013	simplehuman, LLC		
	585	EP 001420590-0001	09-11-2014	simplehuman, LLC		
	586	EP 002766881-0001	11-10-2015	simplehuman, LLC		
	587	EP 002766782-0001	11-10-2015	simplehuman, LLC		
	588	EP 002766782-0002	11-10-2015	simplehuman, LLC		
	589	EP003177500-0001	09-09-2016	simplehuman, LLC		
	590	EP003177500-0002	09-09-2016	simplehuman, LLC		
	591	EP 003362235-0001	10-18-2016	simplehuman, LLC		
	592	EP 003362052-0001	11-14-2016	simplehuman, LLC		
	593	FR 2887152	12-22-2006	Matfor		X-abstract
	594	GB 191004921	06-23-1910	Miguel Munar Y Cona et al.		
	595	GB 2384418	07-30-2003	Grove		X-abstract

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	Filing Date	October 13, 2017
	First Named Inventor	Frank Yang
	Art Unit	3781
(Multiple sheets used when necessary)	Examiner	Kevin Charles Castillo
SHEET 24 OF 26	Attorney Docket No.	SHUMAN.122C1

FOREIGN PATENT DOCUMENTS						
Examiner Initials	Cite No.	Foreign Patent Document Country Code-Number-Kind Code Example: JP 1234567 A1	Publication Date MM-DD-YYYY	Name	Pages, Columns, Lines Where Relevant Passages or Relevant Figures Appear	T ¹
	596	JP 02-152670	06-12-1990	GifuPlas Ind Co Ltd		X-abstract
	597	JP 2004-106713	04-08-2004	Shiroki Corp		X-abstract
	598	JP 2004-231237	08-19-2004	Traumer:KK		X-abstract
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	621	TWD176312	06-11-2016	simplehuman, LLC		
	622	TWD176313	06-11-2016	simplehuman, LLC		

Examiner Signature /DAVID LUO/	Date Considered 10/08/2019
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***Examiner:** Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

T¹ - Place a check mark in this area when an English language translation is attached. **ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH** VOLUME DISTRIBUTORS, Ex. 1002
 IPR2024-00050
 Page 267 of 521

PTO/SB/08 Equivalent

INFORMATION DISCLOSURE STATEMENT BY APPLICANT	Application No.	15/783,370
	Filing Date	October 13, 2017
	First Named Inventor	Frank Yang
	Art Unit	3781
(Multiple sheets used when necessary)	Examiner	Kevin Charles Castillo
SHEET 25 OF 26	Attorney Docket No.	SHUMAN.122C1

FOREIGN PATENT DOCUMENTS						
Examiner Initials	Cite No.	Foreign Patent Document Country Code-Number-Kind Code Example: JP 1234567 A1	Publication Date MM-DD-YYYY	Name	Pages, Columns, Lines Where Relevant Passages or Relevant Figures Appear	T ¹
	623	TW 201538406	10-16-2015	simplehuman, LLC		X-abstract
	624	WO 92/02430 A1	02-20-1992	Bertrand et al.		
	625	WO 96/33671	10-31-1996	Brun et al.		
	626	WO 2005/080232 A1	09-01-2005	Westermann KG		X-abstract
	627	WO 2006/079263 A1	08-03-2006	Wang et al.		
	628	WO 2007/139570	12-06-2007	simplehuman, LLC		
	629	WO 2009/114495 A1	09-17-2009	Verde Home Products		X-abstract
	630	WO 2015/134902 A1	09-11-2015	simplehuman, LLC		
	631	WO 2015/138625 A1	09-17-2015	simplehuman, LLC		
	632	WO 2016/054109 A1	04-07-2016	simplehuman, LLC		
	633	CN 2075182 U	04-17-1991	Shunsheng Plasthetic Ltd		X-abstract
	634	EP 3042864 A1	07-13-2016	Rotho Kunststoff AG		X-abstract
	635	EP 3214019 A1	09-06-2017	simplehuman, LLC		
	636	TWD183552	06-11-2017	simplehuman, LLC		
	637	TWD184449	07-21-2017	simplehuman, LLC		

NON PATENT LITERATURE DOCUMENTS			
Examiner Initials	Cite No.	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T ¹
	638	simplehuman Liner Rim Dual Bucket Rectangular Recycler with Liner Pocket, Stainless Steel, 58 Liter / 15 Gallon, Item No. CW2025, www.Amazon.com, site visited December 29, 2015	
	639	Trento Corner 23 Trash Can, Hailo product webpage, May 2008, http://www.hailo.de/html/default.asp?site=12_71_107&lang=en	
	640	Office Action for Chinese Application No. 201310076306.0, dated December 23, 2015, in 14 pages (Atty. Docket No. SHUMAN.122CN)	
	641	Office Action for Chinese Application No. 201310076306.0, dated August 30, 2016, in 17 pages (Atty. Docket No. SHUMAN.122CN)	
	642	Office Action for Chinese Application No. 201310076306.0, dated January 25, 2017, in 18 pages (Atty. Docket No. SHUMAN.122CN)	
	643	Extended European Search Report for European Application No. 13158229.8, dated July 2, 2013, in 8 pages (Atty. Docket No. SHUMAN.122EP)	

Examiner Signature	/DAVID LUO/	Date Considered	10/08/2019
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***Examiner:** Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

T¹ - Place a check mark in this area when an English language translation is attached.

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH VOLUME DISTRIBUTORS, Ex. 1002

PLETHUMAN LLC, IPR2024-00050

Page 268 of 521

PTO/SB/08 Equivalent

INFORMATION DISCLOSURE STATEMENT BY APPLICANT	Application No.	15/783,370
	Filing Date	October 13, 2017
	First Named Inventor	Frank Yang
	Art Unit	3781
(Multiple sheets used when necessary)	Examiner	Kevin Charles Castillo
SHEET 26 OF 26	Attorney Docket No.	SHUMAN.122C1

NON PATENT LITERATURE DOCUMENTS			
Examiner Initials	Cite No.	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T ¹
	644	Search Report for Taiwanese Design Application No. 102302061, dated June 20, 2013, in 1 page (Atty. Docket No. SHUMAN.122XTW)	

27387444

Examiner Signature	/DAVID LUO/	Date Considered	10/08/2019
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***Examiner:** Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

T¹ - Place a check mark in this area when an English language translation is attached.

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH (D.L.)

VOLUME DISTRIBUTORS, Ex. 1002

SHUMAN LLC, IPR2024-00050

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

First Inventor	:	Frank Yang
App. No.	:	15/783,370
Filed	:	October 13, 2017
For	:	TRASH CAN ASSEMBLY
Examiner	:	David S. Luo
Art Unit	:	2837
Conf. No.	:	6434

AMENDMENT AFTER ALLOWANCE UNDER 37 C.F.R. § 1.312**Mail Stop Amendment**

Commissioner for Patents

P.O. Box 1450

Alexandria, VA 22313-1450

Dear Commissioner:

This amendment after allowance is being filed pursuant to 37 C.F.R. § 1.312 before or with payment of the issue fee in the above-referenced application. Applicant respectfully requests entry of the following:

Amendments to the Claims, which begin on page 2;

Summary of Interview, which begins on page 6; and

Remarks, which begin on page 7.

AMENDMENTS TO THE CLAIMS

Please amend Claim 21 as indicated below.

1-20. (Canceled)

21. (Currently Amended) A trash can assembly comprising:

a body component comprising a lower base, an upper opening, and a front upper edge; and

a lid assembly configured to couple with the body component, the lid assembly comprising:

a lid configured to rotate, relative to the body, between a lower position and an upper position;

~~a power transmission device configured to drive the lid between the lower position and the upper position; and~~

a trim member configured to rotate between a closed position and an open position, wherein:

in the closed position, a front of the trim member is adjacent the front upper edge of the body component; and

in the open position, the front of the trim member is spaced apart from and vertically higher than the front upper edge of the body component; and

a power transmission device configured to drive the lid between the lower position and the upper position; and

a retaining mechanism configured to maintain the trim member in the open position against the force of gravity.

22. (Previously Presented) The trash can assembly of Claim 42, wherein the lid assembly further comprises an electronic sensor, wherein the motor is configured to be activated in response to a signal from the electronic sensor, and wherein the trash can assembly is configured such that the electronic sensor is disabled when the trim member is in the open position.

23. (Previously Presented) The trash can assembly of Claim 21, wherein the retaining mechanism comprises a detent.

24. (Previously Presented) The trash can assembly of Claim 21, wherein, in the open position, the trim member is at an acute angle with respect to a longitudinal axis of the body component.

25. (Previously Presented) The trash can assembly of Claim 21, wherein the retaining mechanism comprises a cam structure and a recess, the cam structure configured to be received in the recess when the trim member is in the open position.

26. (Previously Presented) The trash can assembly of Claim 25, wherein:
the retaining mechanism further comprises a ramp; and
the trash can assembly is configured such that, as the trim member rotates from the closed position to the open position, the cam structure slides along the ramp and engages into the recess.

27. (Previously Presented) The trash can assembly of Claim 26, wherein:
the cam structure is positioned on the trim ring; and
the ramp is positioned on a backside enclosure that is positioned on an exterior surface of a rear wall of the trash can assembly.

28. (Previously Presented) The trash can assembly of Claim 21, wherein:
a majority of the periphery of the lid is received in the trim member when the trim member is in the closed position and the lid is in the lower position; and
a majority of the periphery of the lid is positioned outside of the trim member when the trim member is in the closed position and the lid is in the upper position.

29. (Previously Presented) The trash can assembly of Claim 21, wherein, when the lid is in the lower position and the trim ring is in the closed position, the entire periphery of the lid is received in the trim ring.

30. (Previously Presented) The trash can assembly of Claim 21, wherein the trim member and the lid are configured to rotate about the same axis.

31. (Previously Presented) The trash can assembly of Claim 21, wherein the trim member further comprises an exterior wall that extends:
generally parallel with a longitudinal axis of the trash can;
downward beyond an upper lip of the body component; and
radially outward from the upper lip of the body component.

32. (Previously Presented) The trash can assembly of Claim 21, wherein the body component has a rectangular shape.

33. (Previously Presented) The trash can assembly of Claim 21, wherein at least a front half of the body portion has a generally cylindrical shape.

34. (Canceled)

35. (Previously Presented) A method of mounting a trash bag, the method comprising:

obtaining a trash can assembly comprising a body component, lid, and trim ring, the lid and trim ring each configured to rotate relative to the body component;

rotating the trim ring from a closed position to an open position;

engaging the trim ring with a retaining mechanism;

maintaining the trim ring in the open position against the force of gravity with the retaining mechanism, the trim ring being held in the open position at an acute angle with respect to a longitudinal axis of the body component;

inserting a trash bag into the trash can assembly;

positioning an upper portion of the trash bag over an upper edge of the body component;

disengaging the trim ring from the retaining mechanism; and

rotating the trim ring from the open position to the closed position.

36. (Previously Presented) The method of Claim 35, further comprising visually obscuring, with the trim ring, the upper portion of the trash bag and the upper edge of the body component.

37. (Previously Presented) The method of Claim 35, further comprising rotating the lid from a lower position to an upper position, rotating the lid from the upper position the lower position, and receiving the entire periphery of the lid in the trim ring.

38. (Previously Presented) The method of Claim 35, wherein rotating the trim ring from the closed position to the open position further comprises rotating the trim ring about the same axis as the lid.

39. (Previously Presented) The method of Claim 35, wherein engaging the trim ring with the retaining mechanism comprises engaging the trim ring with a detent.

40. (Previously Presented) The method of Claim 35, wherein engaging the trim ring with the retaining mechanism comprises sliding a cam structure along a ramp in a first direction, and receiving the cam structure in a recess.

41. (Previously Presented) The method of Claim 40, wherein disengaging the trim ring with the retaining mechanism comprises removing the cam structure from the recess, and sliding the cam structure along the ramp in a second direction that is generally opposite the first direction.

42. (Previously Presented) The trash can assembly of Claim 21, wherein the power transmission device comprises a motor.

43. (Previously Presented) The trash can assembly of Claim 21, wherein the power transmission device comprises a footpedal.

44. (Previously Presented) The trash can assembly of Claim 21, wherein the body component further comprises an internal liner configured to support a trash bag.

Application No.: 15/783,370
Filing Date: October 13, 2017

SUMMARY OF INTERVIEW

A telephonic interview occurred on November 15, 2019 and was attended by Examiner Luo and Applicant's representative, Jason Swartz. The amendment to Claim 21 presented on page 2 of this submission was discussed. Examiner Luo indicated that such an amendment was acceptable and suggested submitting the amendment under Rule 312.

Application No.: 15/783,370
Filing Date: October 13, 2017

REMARKS

This Amendment pursuant to 37 C.F.R. § 1.312 is being filed after the October 17, 2019 mailing of the Notice of Allowance in the above-identified application and before or with payment of the issue fee.

Applicant thanks the Examiner for the helpful telephonic interview and the discussion of amended Claim 21. As suggested by the Examiner, Applicant is submitting the amendment under Section 312.

Applicant respectfully requests entry of this amendment and prompt forwarding to the Office of Patent Publication for printing in the issued patent. If there are any remaining issues, the Examiner is cordially invited to call the undersigned at (949) 721-5377.

Please charge any additional fees, including any fees for additional extension of time, or credit overpayment to Deposit Account No. 11-1410.

Respectfully submitted,

KNOBBE, MARTENS, OLSON & BEAR, LLP

Dated: November 15, 2019

By: Jason R. Swartz/

Jason Swartz

Registration No. 64,420

Registered Practitioner

Customer No. 20995

(949) 760-0404

31713238

Electronic Acknowledgement Receipt

EFS ID:	37767849
Application Number:	15783370
International Application Number:	
Confirmation Number:	6434
Title of Invention:	TRASH CAN ASSEMBLY
First Named Inventor/Applicant Name:	Frank Yang
Customer Number:	20995
Filer:	Jason R. Swartz/Fabiola Esmerio
Filer Authorized By:	Jason R. Swartz
Attorney Docket Number:	SHUMAN.122C1
Receipt Date:	15-NOV-2019
Filing Date:	13-OCT-2017
Time Stamp:	17:25:27
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no
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File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1		312_Amendment_SHUMAN12 2C1.pdf	121628 836c9c39d1df5197ac451844b59ea41f15d6 ed02	yes	7

	Multipart Description/PDF files in .zip description		
	Document Description	Start	End
	Amendment after Notice of Allowance (Rule 312)	1	1
	Claims	2	5
	Applicant summary of interview with examiner	6	6
	Applicant Arguments/Remarks Made in an Amendment	7	7

Warnings:

Information:

Total Files Size (in bytes):	121628
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This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.



UNITED STATES PATENT AND TRADEMARK OFFICE

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United States Patent and Trademark Office
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Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
15/783,370	10/13/2017	Frank Yang	SHUMAN.122C1	6434
20995	7590	11/29/2019	EXAMINER	
KNOBBE MARTENS OLSON & BEAR LLP			LUO, DAVID S	
2040 MAIN STREET			ART UNIT	
FOURTEENTH FLOOR			PAPER NUMBER	
IRVINE, CA 92614			2837	
			NOTIFICATION DATE	DELIVERY MODE
			11/29/2019	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

efiling@knobbe.com

jayna.cartee@knobbe.com

Response to Rule 312 Communication	Application No. 15/783,370	Applicant(s) Yang et al.	
	Examiner DAVID S LUO	Art Unit 2837	AIA (FITF) Status No
<p align="center">-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --</p> <p>1. ☒ The amendment filed on <u>15 November 2019</u> under 37 CFR 1.312 has been considered, and has been:</p> <p>a) ☒ entered.</p> <p>b) ☐ entered as directed to matters of form not affecting the scope of the invention.</p> <p>c) ☐ disapproved because the amendment was filed after the payment of the issue fee. Any amendment filed after the date the issue fee is paid must be accompanied by a petition under 37 CFR 1.313(c)(1) and the required fee to withdraw the application from issue.</p> <p>d) ☐ disapproved. See explanation below.</p> <p>e) ☐ entered in part. See explanation below.</p> <p><u>The amendment filed on 11/15/2019 has been approved to enter.</u></p>			
/DAVID LUO/ Primary Examiner, Art Unit 2837			

SHUMAN.122C1

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

First Inventor	:	Frank Yang
App. No.	:	15/783,370
Filed	:	October 13, 2017
For	:	TRASH CAN ASSEMBLY
Examiner	:	David S. Luo
Art Unit	:	2837
Conf. No.	:	6434

AMENDMENT AFTER ALLOWANCE UNDER 37 C.F.R. § 1.312**Mail Stop Amendment**

Commissioner for Patents

P.O. Box 1450

Alexandria, VA 22313-1450

Dear Commissioner:

This amendment after allowance is being filed pursuant to 37 C.F.R. § 1.312 before or with payment of the issue fee in the above-referenced application. Applicant respectfully requests entry of the following:

Amendments to the Claims, which begin on page 2;

Summary of Interview, which begins on page 6; and

Remarks, which begin on page 7.

REQUEST FOR CONTINUED EXAMINATION(RCE)TRANSMITTAL **(Submitted Only via EFS-Web)**

Application Number	15783370	Filing Date	2017-10-13	Docket Number (if applicable)	SHUMAN.122C1	Art Unit	2837
First Named Inventor	Frank Yang			Examiner Name	David S. Luo		

This is a Request for Continued Examination (RCE) under 37 CFR 1.114 of the above-identified application.

Request for Continued Examination (RCE) practice under 37 CFR 1.114 does not apply to any utility or plant application filed prior to June 8, 1995, or to any design application. The Instruction Sheet for this form is located at WWW.USPTO.GOV

SUBMISSION REQUIRED UNDER 37 CFR 1.114

Note: If the RCE is proper, any previously filed unentered amendments and amendments enclosed with the RCE will be entered in the order in which they were filed unless applicant instructs otherwise. If applicant does not wish to have any previously filed unentered amendment(s) entered, applicant must request non-entry of such amendment(s).

☐ Previously submitted. If a final Office action is outstanding, any amendments filed after the final Office action may be considered as a submission even if this box is not checked.

☐ Consider the arguments in the Appeal Brief or Reply Brief previously filed on _____

☐ Other _____

☒ Enclosed

☐ Amendment/Reply

☒ Information Disclosure Statement (IDS)

☐ Affidavit(s)/ Declaration(s)

☐ Other _____

MISCELLANEOUS

☐ Suspension of action on the above-identified application is requested under 37 CFR 1.103(c) for a period of months _____
 (Period of suspension shall not exceed 3 months; Fee under 37 CFR 1.17(i) required)

☐ Other _____

FEES

☒ The RCE fee under 37 CFR 1.17(e) is required by 37 CFR 1.114 when the RCE is filed.
 The Director is hereby authorized to charge any underpayment of fees, or credit any overpayments, to
 Deposit Account No 111410

SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT REQUIRED

☒ Patent Practitioner Signature
 Applicant Signature

Signature of Registered U.S. Patent Practitioner			
Signature	Jason R. Swartz/	Date (YYYY-MM-DD)	2020-01-10
Name	Jason R. Swartz	Registration Number	64420

This collection of information is required by 37 CFR 1.114. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450.

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

Privacy Act Statement

The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C. 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether the Freedom of Information Act requires disclosure of these records.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspections or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

Electronic Patent Application Fee Transmittal					
Application Number:		15783370			
Filing Date:		13-Oct-2017			
Title of Invention:		TRASH CAN ASSEMBLY			
First Named Inventor/Applicant Name:		Frank Yang			
Filer:		Jason R. Swartz/Linh Do			
Attorney Docket Number:		SHUMAN.122C1			
Filed as Small Entity					
Filing Fees for Utility under 35 USC 111(a)					
Description		Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Basic Filing:					
Pages:					
Claims:					
Miscellaneous-Filing:					
Petition:					
Patent-Appeals-and-Interference:					
Post-Allowance-and-Post-Issuance:					
Extension-of-Time:					

Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Miscellaneous:				
RCE- 1ST REQUEST	2801	1	650	650
Total in USD (\$)				650

Electronic Acknowledgement Receipt

EFS ID:	38259917
Application Number:	15783370
International Application Number:	
Confirmation Number:	6434
Title of Invention:	TRASH CAN ASSEMBLY
First Named Inventor/Applicant Name:	Frank Yang
Customer Number:	20995
Filer:	Jason R. Swartz/Jim Nyenhuis
Filer Authorized By:	Jason R. Swartz
Attorney Docket Number:	SHUMAN.122C1
Receipt Date:	10-JAN-2020
Filing Date:	13-OCT-2017
Time Stamp:	13:34:15
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	CARD
Payment was successfully received in RAM	\$650
RAM confirmation Number	E202010D35124516
Deposit Account	111410
Authorized User	Jim Nyenhuis

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37 CFR 1.16 (National application filing, search, and examination fees)

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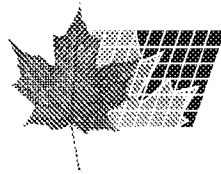
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(72) Adriaansen, David L., US

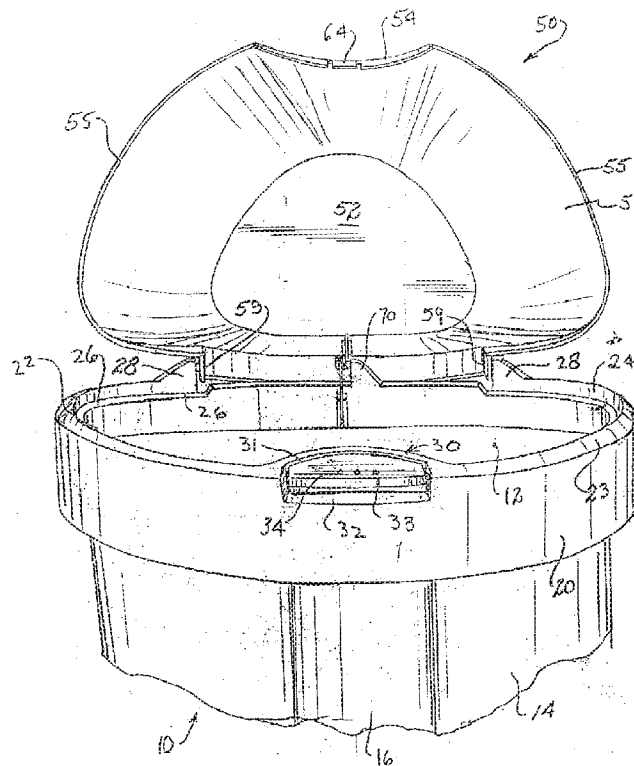
(71) TUCKER HOUSEWARES, US

(51) Int.Cl.⁶ B65F 1/16

(30) 1996/03/25 (08/624,682) US

(54) **CONTENANT A DECHETS POUR USAGE INTERIEUR, AVEC
COUVERCLE A RESSORT**

(54) **INDOOR WASTE CONTAINER WITH SPRING ACTUATED LID**



(57) Poubelle munie d'une base et d'un couvercle. Le couvercle est raccordé à la base par une charnière à ressort hélicoïdal qui entraîne le couvercle dans une position ouverte. Un mécanisme de verrouillage inclut sur le couvercle une partie de la paroi déformable et un élément de verrouillage à pivot sur la base avec une extrémité courbée pour exercer entre les deux un ajustement à frottement dur lorsque le couvercle est fermé et pressé vers le bas. Le mouvement du verrou relâche l'élément de verrouillage de la paroi du couvercle et amorce le mouvement du couvercle dans le sens de l'ouverture. De plus, la charnière à ressort permet d'ouvrir complètement le couvercle suite au mouvement du couvercle vers une position ouverte.

(57) A waste container has a base and a lid. The lid is connected to the base by a coil spring hinge that biases the lid to an open condition. A latch mechanism includes a deformable wall section on the lid and a pivotable latch member on the base with a curved end to effect a force fit therebetween when the lid is closed and pressed downwardly. Movement of the latch disengages the base latch member from the lid wall section and starts movement of the lid in a direction to open it. Further, lid movement towards an open position is then caused by the spring hinge to fully open the lid.

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ABSTRACT

A waste container has a base and a lid. The lid is connected to the base by a coil spring hinge that biases the lid to an open condition. A latch mechanism includes a deformable wall section on the lid and a pivotable latch member on the base with a curved end to effect a force fit therebetween when the lid is closed and pressed downwardly. Movement of the latch disengages the base latch member from the lid wall section and starts movement of the lid in a direction to open it. Further, lid movement towards an open position is then caused by the spring hinge to fully open the lid.

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INDOOR WASTE CONTAINER WITH SPRING ACTUATED LIDField of the Invention:

The invention relates to a waste container with a lid activated by a spring and a latching mechanism to hold the lid closed.

Background of the Invention

Waste containers are used for a variety of purposes, both indoors and outdoors. One typical use is in a kitchen or other indoor environment. Such a waste container for indoor use often has both a base and a lid. In many types of such containers, the lid is a separate cover piece that is removed from and replaced onto the base. In other types, the lid is hingedly connected to the base and a hand or foot operated pedal raises and lowers the lid via a mechanical connection.

While all of such containers are usually adequate for their intended purpose of storing waste in the container base, some are relatively costly and complex. For example, a container with a foot-operated pedal requires a relatively complex and expensive mechanism to raise and lower the lid. Therefore, it is desired to provide containers that are efficient from the

point of view of connecting the lid to the base, and are easy to operate, easy to manufacture, and therefore of low cost.

Brief Description of the Invention

The present invention relates to a waste container having a lid that is hinged to the base by a simple coil spring that biases the lid to a normally open position. A latch mechanism is provided to hold the lid in a closed position to cover the open top of the base.

The latch mechanism includes a latch pad with a hook that is pivotably mounted to the base. The lid has a rim that includes a crenelated, deformable wall section aligned with the latch pad hook. Pressing the lid downwardly against the force of the spring brings the latch hook and crenelated wall section into an engaging force fit that keeps the lid closed on the top of the base. Pressing downwardly on the latch pad disengages the hook from the crenelated wall and gives a slight movement to the lid toward an open condition. The force of the spring takes over to move the lid to its finally open position.

The container of the invention is effective in its operation and of relatively simple construction.

Objects of the Invention

An object of the invention is to provide a waste container of relatively simple construction having a hinged lid.

A further object is to provide a waste container with a hinged lid including a spring that biases the lid to an open position and a latch mechanism to hold the lid closed.

Yet another object is to provide a waste container with a spring loaded lid and a latch mechanism provide by a pivotable hook on the container base that makes a force fit engagement with a part of the lid.

A further object is to provide a waste container with a spring loaded lid in which activation of a latch pad disengages a latching force fit between the container lid and its base.

Brief Description of the Drawings

Other objects and advantages of the present invention will become more apparent upon reference to the following specification and annexed drawings in which:

Fig. 1 is a perspective view of a portion of the container with the lid open;

Fig. 2 is a top plan view of the container with a portion of the lid shown broken away;

Fig. 3 is a cross-sectional view taken along lines 3-3 of Fig. 2 of the top part of the container with lid assembled and in a closed position;

Fig. 4 is a fragmentary cross-sectional view taken along lines 4-4 of Fig. 3 of part of the lid shown attached to the base;

Fig. 5 is a fragmentary cross-sectional view of the latch portion of the base and lid in the closed position;

Fig. 6 is a view similar to Fig. 5 showing the latch pressed to disengage the lid;

Fig. 7 is a fragmentary elevational view partly in cross-section of the spring attached to the base and lid.

Detailed Description of the Invention

Referring to the drawings, as shown in Fig. 1, the container has a base 10 having the general shape of a sector of a circle. That is, the base vertical rear wall 12 is elongated and gently curved. The vertical front wall 14 is approximately a sector of a circle. The rear and front walls 12, 14 are continuous.

Container base 10 is preferably injection molded in one piece of a suitable thermoplastic material such as polyethylene, polypropylene, ABS, etc. The size of the base is selected as desired. The walls of base 10 are slightly tapered inwardly so that a number of bases can be stacked for manufacturing and shipping purposes. As seen in Fig. 1, for primarily decorative purposes, a curved depression 16 extends vertically along a part of the base front wall 14.

At the top of the base 10 is a peripheral band 20 which extends outwardly of the vertical walls 12 and 14 and completely around the top of base 10. The height of the band 20 can be of any desired size, and is usually selected for a combination of base strength and aesthetic purposes. Inward of the outer surface of band 20 is a vertical wall 24 that terminates in an upper edge 22. The band upper edge 22 is spaced inwardly from the band 20 outer surface and there is a chamfer 23 between the upper edge 22 and the band outer surface. At the lower edge of vertical wall 24 is a generally horizontal peripheral ledge 26. The ledge 26 is spaced downwardly from the band edge 22 by an amount corresponding to the height of a peripheral lip of the lid, to be described.

On the top edge of the band 20 of the base rear wall 12 are a pair of spaced upstanding generally triangular hinge mounting shoulders 28. Each shoulder 28 has a slot 29 (see Fig. 4) in its inner face for receiving a hinge pin from the lid, to be described.

In the front wall 14 portion of the band 20 is a semi-elliptical, or scalloped, seat 30 that extends inwardly of the base. Seat 30 has a reinforced curved vertical inner wall 31, reinforced vertical side walls 36 (see Fig. 2) and a bottom wall 32 that define a cavity 33 for a movable latch release pad 34. Latch release pad 34 has a shape corresponding to that of the cavity 33. The base latch pad cavity 33 opposed vertical reinforced side walls 36, each have a hole 37 therein, as seen in Figs. 3, 5 and 6. The latch pad 34 has vertical end walls 35 from each of which extends a hinge pin 41. The latch pad hinge pins 41 fit into the holes 37 of the cavity walls 36 (see Fig. 2). Accordingly, the latch pad 34 is pivotal up and down relative to the bottom wall 32 of the latch pad recess 33.

The container also includes a lid 50 of a shape corresponding to and somewhat smaller than the base band 20 interior peripheral vertical wall 24. Lid 50 has a flat section 52 and an extending downwardly sloping surrounding outer wall 51 that terminates in a downwardly extending peripheral rim 55. The height of lid rim 55 approximately corresponds to the depth of the base band interior vertical wall 24, that is, from the base band upper edge 23 down to the band interior surrounding horizontal ledge 26. The front part of the lid has a scallop shaped cut out 54 that corresponds to and is somewhat larger than

the base latch pad seat 30 inner curved wall 31. The size of the lid is such as to fit within the peripheral vertical wall 24 of base band 20 with the lower surface of its rim 55 touching the base band horizontal peripheral wall 26.

Referring to Figs. 3, the rear part of the lid 50 has a downwardly sloping section 58 that extends from the lid flat top section 52. A flat 57 extends rearwardly from the sloping section 57 and a downwardly extending skirt 56 projects from flat 57. Skirt 56 is generally perpendicular to the lid flat top section 52. As seen in Fig. 2, the flat 57 and downwardly extending skirt 56 have a length somewhat less than the spacing between the opposing inner faces of base hinge shoulder 28.

A wall 59 (see Figs. 1 and 2) projects inwardly of the lid from each end of the junction of the flat 56 and skirt 56. The walls 59 are generally transverse to the skirt 56 and parallel to the inner faces of the base hinge mounting shoulders 28. A hinge pin 61 projects outwardly from each end wall 59 to fit into a corresponding slot 29 of the hinge mounting shoulder 28 (see Fig. 4). This permits the lid to pivot between open (Fig. 1) and closed (Fig. 2) positions. The placement of the lid hinge pins 61 relative to the slots 29 of the base hinge mounting shoulders 28 is such as to permit the bottom of lid skirt 56 to clear the top of the base band 20 as the lid opens and closes.

Lid skirt 56 has an L-shaped slot 70 near its center. A mounting recess 72 is formed on the interior of the lid sloping section 51 and a recess 74 is formed on the interior of the base band 20. A coil spring hinge 76 has its central coil part in the short leg of lid skirt wall slot 70 and a respective end leg 72a

and 74a in each of the recesses 72 and 74 (see Fig. 7). Each spring end 72a and 74a can have a generally rectangular piece or bracket fit in the respective recess 72, 74. This stabilizes and supports the spring legs. As mounted, the coil spring 76 is of a type that exerts a force to hold the lid 50 in an open position.

The end of the latch pad 34 (see Figs. 3, 5 and 6) is formed with an integral L-shaped hook 42 that is transverse to the pad. The front end 43 of the hook has a flat surface 45 transverse to and wider than the hook. The hook flat surface 45 terminates in a downwardly tapered or curved front end 46.

The front scallop 54 of the lid peripheral rim 55 has a separate section 64 (see Fig. 1) with a crenelated, or V-shaped, wall (Figs. 3, 5 and 6) with a downwardly extending apex 66. The crenelation 64 is aligned with the latch pad 42 hook front end 45 at the center of the crenelation 64 when the lid is closed.

The lid 50 is also preferably molded in one section from any suitable thermoplastic material. The lid latch pad 34 and its integral hook 42 are also molded of any suitable thermoplastic material, such as polypropylene, which is "harder" than the lid material, especially the material of the crenelated section 64.

Operation of the invention is as follows. The lid 50 is shipped separately from the base 10. It is assembled to the base by inserting the hinge pins 61 into the openings 29 of the base hinge mounting shoulders 28. The spring 76 is then placed

in lid skirt 56 opening 70 and its legs 72a and 74a placed in the respective slots 72 and 74.

When it is desired to close the container, the lid is lowered by user applying direct movement against the force of spring 76. As the lid is pressed downwardly the lid rim 55 sits within the peripheral vertical wall 24 of the base band 20. As seen in Fig. 5, the apex 66 of the lid crenelated wall section 64 engages the curved front portion 46 of the latch pad hook 42. The engagement is a type of wedging action, or force fit. That is, the hook front end depresses or deforms the material of the lid crenelated section. This holds the lid in a closed position against the force of spring 76 and also causes the latch pad 34 to pivot slightly upwardly about its hinge pins 37 (counter clockwise in Fig. 5).

When it is desired to open the lid, the user pushes down (see Fig. 6) on the top of latch pad 34. This pivots the hook 42 and its curved flat end 46 upwardly as the latch pad 34 pivots clockwise around its hinge pins 37. Upward movement of the hook end 46 breaks (detaches) the fastening engagement between the apex 66 of the lid crenelation 64 and the sloping surface 46 of the hook. It also imparts a slight upward movement to the lid 50 to start to move it to an open position. There is then continued movement of the lid 50 by the force of spring 76 to raise it to its fully open position.

As seen, a container is provided with a base that has a pivotable lid attached by a hinge with a spring that normally holds the lid open. A latching mechanism holds the lid closed and actuation of the latching mechanism causes the lid to

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automatically assume a fully open position under force of the spring. The attachment and operation of the lid opening and closing is simple, efficient and is relatively inexpensive.

WE CLAIM:

1. A waste container comprising:
a base having an open top;
a lid for closing the base open top;
a spring hinge connecting said lid to said base to hold the lid in a normal open position relative to the base open top;
a latch member pivotally mounted to the base; and
an integral engaging member on said lid that opposes the base latch member when the lid is closed, the lid engaging member engaging the base latch member to pivot it in a first direction to a position to further engage the lid engaging member to hold the lid in a closed position, with pivoting the base latch member in a direction opposite to said first direction releasing the engagement between the latch member and the engaging member to cause opening of the lid under force of the spring hinge.

2. A waste container as in claim 1 wherein said lid integral engaging member comprises a downwardly extending crenelated wall section, said latch member comprising a hook having an end piece for force fit engagement with said wall section.

3. A waste container as in claim 2 wherein said base latch member further comprises a pad piece, and hinge pins on one of said latch member and base to fit into openings in the other

of said latch member and base to pivotably mount said latch member to said base.

4. A waste container as in claim 3 wherein said base has a recess at its upper end, said pad fitting into said recess.

5. A waste container as in claim 4 wherein said recess is of semi-elliptical shape and said latch pad has a conforming shape.

6. A waste container as in claim 1 wherein said base has a cross-sectional shape with a front wall generally of a sector of a circle and a curved rear wall.

7. A waste container as in claim 2 wherein said crenelated section of said lid has a generally V-shaped cross section.

8. A waste container as in claim 3 wherein downward force on said latch pad moves an end of the hook upwardly to disengage the hook from the lid and commence upward movement of the lid under force of the spring hinge.

9. A waste container as in claim 8 wherein the end of the hook engaging the lid crenelated cross-section is curved.

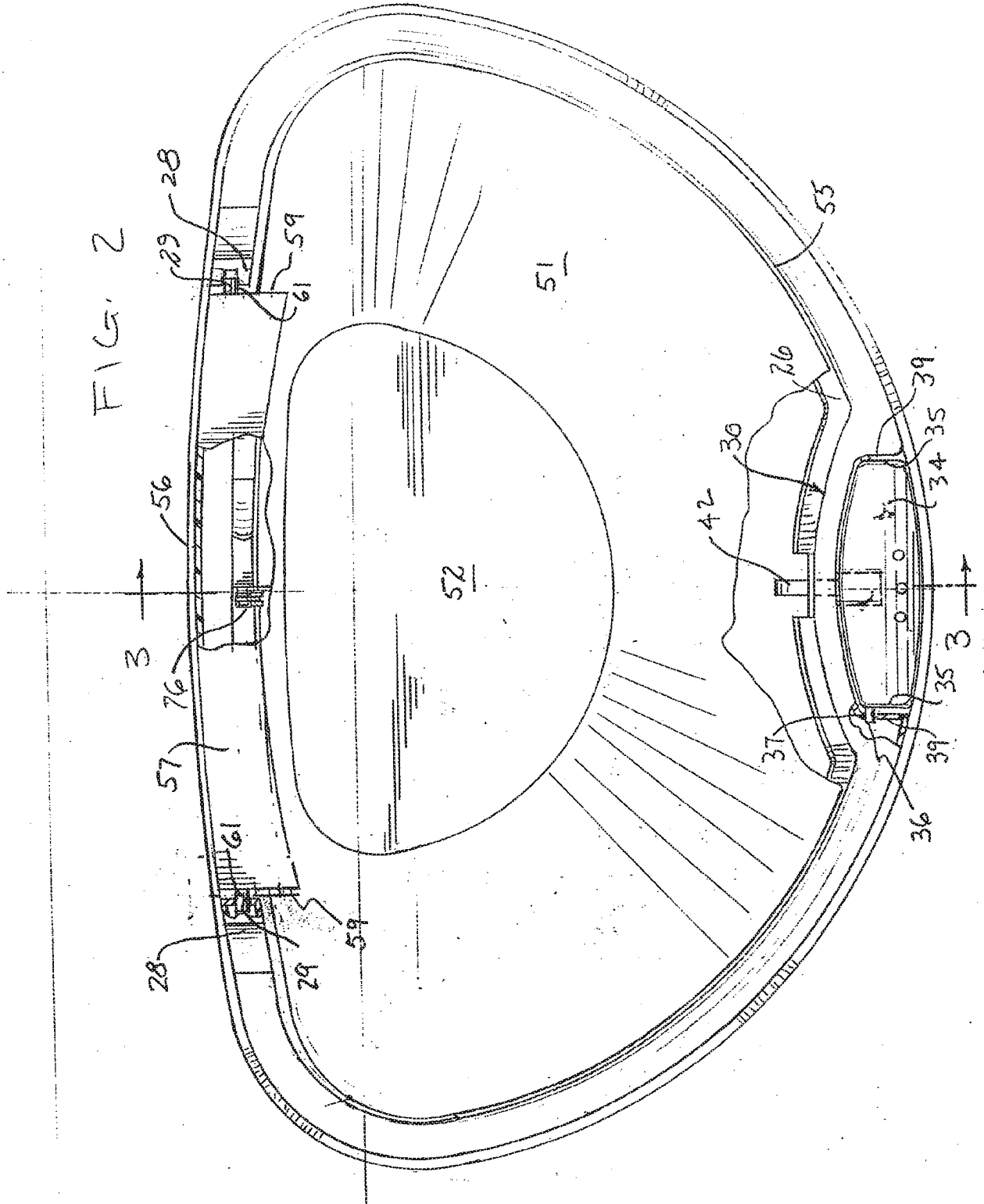
10. A waste container as in claim 8 wherein said base latch member further comprises a pad piece, and hinge pins engaging openings in the base to pivotably mount said latch member to said base.

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FIG. 2



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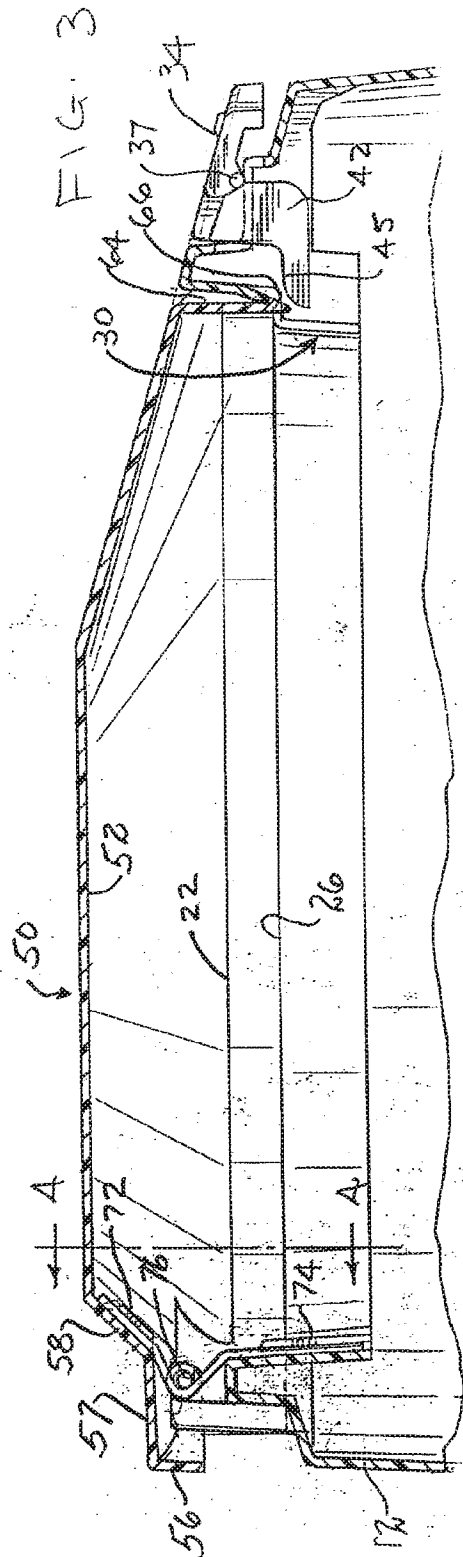


FIG. 5

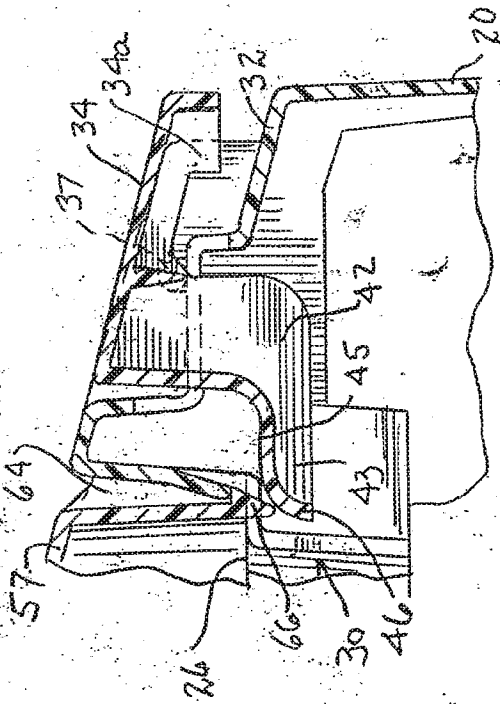


FIG. 4

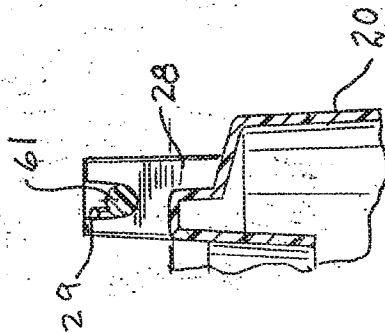
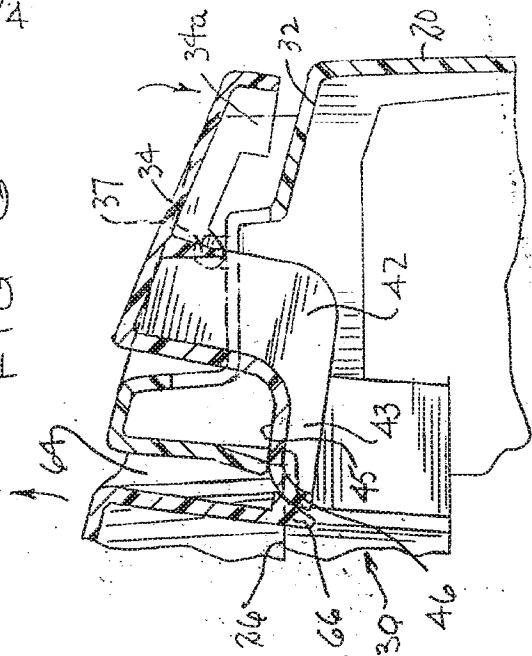


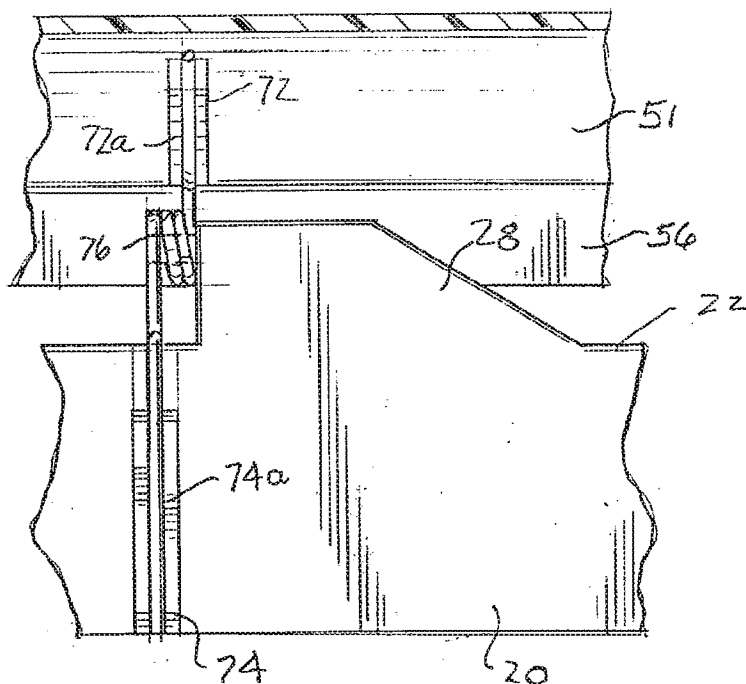
FIG. 6



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FIG. 7





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B65D 43/16 (2006.01), *B65D 43/26* (2006.01),
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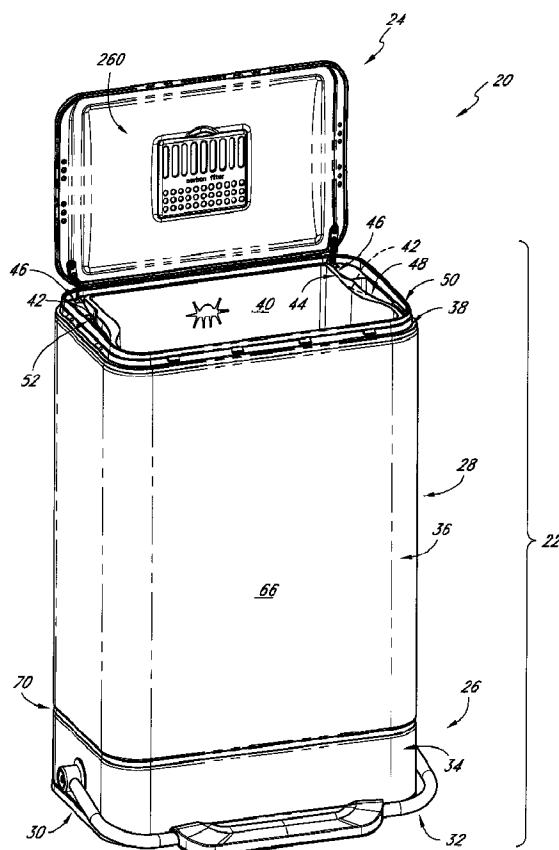
(71) Demandeur/Applicant:
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(54) Titre : RECEPTACLE AVEC AMORTISSEUR DE MOUVEMENT DU COUVERCLE, DISPOSITIF DE FILTRAGE ET
DISPOSITIF ANTI-GLISSEMENT

(54) Title: RECEPTACLE WITH MOTION DAMPER FOR LID, AIR FILTRATION DEVICE, AND ANTI-SLIDING
MECHANISM



(57) Abrégé/Abstract:

A receptacle having a lid can be provided with a pair of dampers configured to slow the movement of the lid from its open position toward its closed position. The dampers can be provided at opposite ends of a pedal connected to the receptacle body at opposite

(57) **Abrégé(suite)/Abstract(continued):**

lateral positions relative to a side of the receptacle body. The receptacle can also include an air filtration device mounted in its lid and configured to guide air through the filter device during the downward motion of the lid. The receptacle can also include at least one damper configured to provide dampening forces against the motion of the lid in both opening and closing directions. The receptacle can also include an anti-sliding device configured to increase the receptacle's resistance to sliding across a floor when a user steps on a pedal to actuate the lid.

**RECEPTACLE WITH MOTION DAMPER FOR LID, AND ANTI-SLIDING
MECHANISM**

ABSTRACT OF THE DISCLOSURE

A receptacle having a lid can be provided with a pair of dampers configured to slow the movement of the lid from its open position toward its closed position. The dampers can be provided at opposite ends of a pedal connected to the receptacle body at opposite lateral positions relative to a side of the receptacle body. The receptacle can also include an air filtration device mounted in its lid and configured to guide air through the filter device during the downward motion of the lid. The receptacle can also include at least one damper configured to provide dampening forces against the motion of the lid in both opening and closing directions. The receptacle can also include an anti-sliding device configured to increase the receptacle's resistance to sliding across a floor when a user steps on a pedal to actuate the lid.

**RECEPTACLE WITH MOTION DAMPER FOR LID, AIR FILTRATION DEVICE,
AND ANTI-SLIDING MECHANISM**

BACKGROUND OF THE INVENTIONS

Field of the Inventions

[0001] The present inventions relate to receptacles having doors or lids, some of the inventions relating to mechanisms configured to slow at least the closing movement of the lid, some of the inventions relating to air filtration devices for receptacles, and some inventions relating to mechanisms designed to reduce unintended sliding of a receptacle during use.

Description of the Related Art

[0002] Receptacles and other devices having lids or doors are used in a variety of different settings. For example, in both residential and commercial settings, trashcans and other devices often have lids or doors for preventing the escape of the contents from the receptacle. In the context of trashcans, some trashcans include lids or doors to prevent odors from escaping and to hide the trash within the receptacle from view. Additionally, the lid of a trashcan helps prevent contamination from escaping from the receptacle.

[0003] Recently, trashcans with rotary-type motion dampers for slowing the motion of the lids have become commercially available. More specifically, these rotary dampening mechanisms are connected to the lids of the trashcans so as to slow the closing movement of the lids. As such, the trashcan is more aesthetically pleasing because the lid closes slowly, thereby preventing a loud slamming noise when the lid is moved to a closing position.

[0004] These types of trashcans often are pedal-actuated, i.e., they include a foot pedal which is connected to the lid for moving the lid toward the open position. The rotary mechanisms are connected to the internal linkage connecting the foot pedal to the lid so as to slow the closing movement of the lid.

SUMMARY OF THE INVENTIONS

[0005] An aspect of at least one of the embodiments disclosed herein includes the realization that when a receptacle, such as a trashcan, is provided with a larger actuation mechanism, such as a large foot pedal, unbalanced loads can be applied to such a foot pedal,

causing unbalanced movements of the foot pedal. For example, in some of the embodiments disclosed herein, a trashcan includes a foot pedal connected to the trashcan at two laterally opposite positions relative to a side of the trashcan. As such, when such a pedal is depressed at a location offset from a center of the pedal, the pedal bar can be twisted. Further, if a motion damper is provided, the dampened movement of the pedal can also be unbalanced, thereby allowing the pedal to remain twisted during movement.

[0006] Thus, in accordance with an embodiment, a trash can comprise a body defining an interior space, the body can comprise a base portion and an upper body portion, and a lid can be moveably mounted to the body so as to be moveable between open and closed positions. At least first and second pedal pivots can be supported by the body and disposed on opposite lateral positions of a side of the body. A pedal can be moveably mounted to the body with the first and second pedal pivots such that the pedal is moveable between resting and actuated positions. The pedal can also be mechanically interfaced to the lid so as to move the lid from its closed position to its open position when the pedal is moved from its resting position to its actuated position. The pedal can comprise a pedal member extending laterally across a side of the body, a first end of the pedal member pivotally supported by the first pedal pivot and a second end of the pedal member being pivotally supported by the second pedal pivot. A first motion damper can be connected to the first end of the pedal member. A second motion damper can be connected to the second end of the pedal member, wherein the first and second dampers can be configured to dampen at least a first movement of the pedal member from the actuated position to the resting position.

[0007] Another aspect of at least one of the embodiments disclosed herein includes the realization that when a user depresses a pedal of a pedal actuated trashcan lid, the trashcan can slide across the floor away from the user. Additionally, some users of such trashcans prefer that trashcan be easily movable across a floor. Thus, there is a difficulty in designing a trashcan that is both easily movable and slidable across a floor yet resistant to movement caused by the forces generated during actuation of a foot pedal.

[0008] Thus, in accordance with another embodiment, a trash can can comprise a body defining an interior space, the body comprising a base portion and an upper body portion and a pedal pivotally mounted to the body, so as to be moveable at least between

resting and actuated positions. A friction device can be configured to increase a resistance against a sliding motion of the trash can across a surface as the pedal is moved between the resting and actuated positions, the friction device being connected to the pedal such that a force pressing the friction device against a surface upon which the trash can rests increases as the pedal is moved to its actuated position.

[0009] Another aspect of at least one of the embodiments disclosed herein includes the realization that it can be advantageous to dampen the opening movement of a lid of a trashcan. For example, some users place trashcans close to a wall. Thus, if the lid of the trashcan is open rapidly, the lid can impact the closely spaced wall and thus create a noise or damage to the lid or wall. Additionally, when lids of trashcans are opened rapidly, the hinge mechanism attaching the lid to the trashcan body can be overstressed, thereby damaging the hinge mechanism and/or other mechanisms.

[0010] Thus, in accordance with another embodiment, a trash can can comprise a body defining an interior space and the body can comprise a base portion and an upper body portion. A lid can be moveably mounted to the body, the lid being moveable between open and closed positions. At least one motion damper can be configured to dampen the movement of the lid from the open position toward the closed position and to dampen the movement of the lid from the closed position to the open position.

[0011] A further aspect of at least one of the embodiments disclosed herein includes the realization that trashcans with lids, even if they include air filtration devices, often discharge trash odors as the lid closes. Additionally, depending on the orientation of the lid, the odors can be discharged directly at the user of the trashcan.

[0012] Thus, in accordance with another embodiment, a trash can can comprise a body defining an interior space and the body can comprise a base portion and an upper body portion. A lid can be movably mounted to the body so as to be movable between opened and closed positions. An air filtration device can be mounted to the trash can. An air guide can be mounted to the trash can and can be configured to guide air through the air filtration device and then downwardly into the interior space as the lid moves from the open position toward the closed position.

BRIEF DESCRIPTION OF THE DRAWINGS

[0013] The above mentioned and other features of the inventions disclosed herein are described below with reference to the drawings of preferred embodiments. The illustrated embodiments are intended to illustrate, but not to limit the inventions. The drawings contain the following figures:

[0014] Figure 1 is a top, front, and right side perspective view of a receptacle assembly in accordance with an embodiment, having a pedal-actuated lid and with the lid in its opened position.

[0015] Figure 2 is an exploded and perspective view of the trashcan illustrated in Figure 1.

[0016] Figure 3 is an enlarged, perspective, and partial sectional view of a mechanism disposed in the interior of the receptacle of Figure 1 and connecting the pedal with a mechanism for opening the lid and with a dampening mechanism.

[0017] Figure 4 is an enlarged, perspective, and partial sectional view of a modification of the embodiment illustrated in Figure 3, including a mechanism designed to resist sliding of the receptacle during actuation of the pedal.

[0018] Figure 5 is an enlarged sectional view of a damper mechanism that can be used with the receptacle illustrated in Figure 1.

[0019] Figure 6 is a top plan view of a lip seal that can be used with a damper illustrated in Figure 5.

[0020] Figure 7 is a sectional view of the lip seal of Figure 6 taken along line 7-7 of Figure 6 taken along line 7-7 of Figure 6.

[0021] Figure 8 is a sectional view of the damper mechanism of Figure 5 in a position corresponding to when the lid is opened to its maximum opened position.

[0022] Figure 9 is a schematic illustration of an air filtration device that can be used with the trashcan of Figure 1, which includes an air guide assembly mounted to an interior side of the lid of the trashcan.

[0023] Figure 10 is a further schematic illustration of the air filtration device illustrated in Figure 9, showing the lid in a position close to a fully closed position.

[0024] Figure 11 is an exploded view of another embodiment of the air filtration device illustrated in Figures 9 and 10.

[0025] Figure 12 is a perspective view of an inner surface of a portion of the air filtration mechanism illustrated in Figures 9 and 10.

[0026] Figure 13 is a sectional view of a modification of the air damper mechanism of Figure 5.

[0027] Figure 14 is an illustration of a piston of the air damper mechanism of Figure 13.

[0028] Figure 15 is an exploded view of the piston of Figure 14.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

[0029] The embodiments of a receptacle with a lid having at least one dampening device for dampening motion of the lid, an air filtration mechanism, and an anti-sliding device are all disclosed in the context of a trashcan. The inventions disclosed herein are described in the context of a trashcan because they have particular utility in this context. However, the inventions disclosed herein can be used in other contexts as well, including, for example, but without limitation, large commercial trashcans, doors, windows, security gates, and other larger doors or lids, as well as doors or lids for smaller devices, such as high precision scales, computer drives, etc.

[0030] Figures 1 and 2 illustrate an embodiment of a receptacle assembly 20. The assembly can include a body portion 22 and a lid portion 24 configured to move between opened and closed positions relative to the body 22, the open position being illustrated in Figure 1.

[0031] The body 22 can include a base portion 26 and an upper body portion 28. The base portion 26 and the upper body portion 28 can be made from a single monolithic piece or from separate pieces connected together.

[0032] In the illustrated embodiment, the base portion includes a lower end 30 configured to support the receptacle 20 in a stable resting position when the trashcan assembly 20 rests on a surface such as a floor, which may be smooth, or uneven. The base portion 26 can be configured to support the upper body portion 28 such that the upper portion 28 can extend upwardly from the base 26.

[0033] The base portion 26 can also provide a mounting arrangement for a pedal 32. The trashcan assembly 20 can further include a mechanism configured to move the lid 24 from the closed to open positions when the pedal 32 is depressed, i.e., from a resting position to an actuating position, discussed in greater detail below.

[0034] The base portion 26 can be made from a single monolithic piece and/or from separate components connected together. In some embodiments, the base portion 26 includes an outer shell 34 which defines an interior cavity. In some embodiments, the outer shell 34 can be formed from sheet metals, such as sheet stainless steel, or other metals, or other materials including plastics, etc. In some embodiments, when sheet metal is used, such as sheet stainless steel, the shell 36 can be made from any of 23-26 gauge stainless sheet steel. Of course, the thinner the gauge sheet steel, the lighter and less expensive the shell 36 will be.

[0035] The upper body portion 28 can also include an outer shell 36 which defines an interior cavity. In some embodiments, the outer shell 36 can be configured to correspond to the shape of the outer surface of the shell 34.

[0036] The upper body portion can also include an upper support member 38 supported by an upper end of the shell 36. The upper support member 38 can be made monolithically with the shell 36 or it can be made from separate components attached to the shell 36. Similar to the shell 34, the shell 36 can be made from any material, including sheet metals, such as stainless steel (e.g., 23-26 gauge stainless sheet steel as noted above), other metals, or other plastics.

[0037] The upper support member 38 can be configured to support a liner 40 within the interior cavity defined by the shells 34 and/or 36. In some embodiments, the upper support member 38 includes a shoulder 42 configured to support an outwardly extending lip 44 of the liner 40. As such, the liner 40 can hang within the shells 34 and/or 36 from the upper support member 38. However, in other configurations, the liner 40 can rest upon an interior surface of the upper body 28 or the base 26. In such a configuration, the upper support member 38, while it does not support the weight of the liner 40, can provide for alignment of the liner 40 within the body 22.

[0038] The upper support member 38 can also include one or more apertures 46 configured to allow a portion of a lid opening mechanism to extend therethrough, described in greater detail below.

[0039] The upper support member 38 can also include additional apertures 48 which can allow air to flow into a space between the liner 40 and an interior surface of the shell 36, also described in greater detail below.

[0040] The lid 24 can be moveably mounted to the body 22 with any known device, such as a hinge which can allow pivoting motion of the lid 24, or other devices providing different movements. The connection between the lid 24 and the body 22 can be constructed so as to connect the lid 24 to the upper support member 38 or directly to the shell 36.

[0041] Although not illustrated in Figures 1 or 2, the trashcan assembly 20 can also include an additional trim ring 39 (Figure 2) extending around an outer surface of the upper support member 38. In some embodiments, the additional trim ring 39 can be made from the same material as the shell 36 so as to provide a consistent outer appearance.

[0042] As illustrated in Figure 1, the upper support member 38 can include a peripheral wall 50 extending around the entire periphery of the support member 38. However, the wall 50 can include cutouts, notches, or gaps if desired.

[0043] Further, the upper support member 38 can include additional recesses configured to allow a user to insert their fingers below the flange 44 of the liner 40 so as to allow a user to conveniently lift the liner 40 out of the body 22. The wall 50 can also include an outer surface 52 that is configured to cooperate with a corresponding surface on the lid 24, described in greater detail below.

[0044] With continued reference to Figure 2, as noted above, a lid opening mechanism 60 can be configured to move the lid 24 from the closed to opened positions when the pedal 32 is moved from the resting to the actuated position. In some embodiments, as used herein, the phrase “resting position” of the pedal 32 refers to a position where the pedal 32 is pivoted towards an upper position. The actuated position of the pedal 32 can refer to when the pedal 32 is pressed downwardly (as viewed in Figure 1), for example, by the foot of a user.

[0045] To allow for this movement between an upwardly pivoted position corresponding to the resting position, and a downwardly pivoted position corresponding to the

actuated position, the pedal 32 can be supported by at least one pivot connection 62. In the illustrated embodiment, there are two pivot connections 62, 64 disposed at laterally opposite positions relative to the front side 66 of the trashcan assembly 20. The pivot mechanisms 62, 64 can be formed in any known manner.

[0046] For example, the pivot mechanisms 62, 64 can be formed with bearings supported by and/or defined by the base portion 26. In some embodiments, bearings 80, 82 are supported by the shell 34. In other embodiments, the pivot mechanism 62, 64 can be supported by an additional support member 68 which also can form part of the base portion 26. In the illustrated embodiment, the bearings 80, 82 are in the form of sleeves configured to pivotally support shafts 83, 85 of the pedal 32.

[0047] The support portion 68 can be configured to nest within shell 34 and/or the shell 36. In the illustrated embodiment, the support 68 includes an outwardly extending flange 70 which rests on an upper edge 72 of the shell 34. Additionally, the flange 70 can be positioned so as to contact and support a lower edge 74 of the shell 36. Thus, as shown in Figure 1, the outermost surface of the flange 70 can be approximately flush with the outermost surfaces of the shells 34, 36. However, in other embodiments, the outermost surface of the flange 70 can extend outwardly relative to the outermost surfaces of the shells 34, 36 or can be recessed inwardly from the outermost surfaces of the shells 34, 36.

[0048] In some embodiments, the shell 34 can include apertures (not shown) sized to allow portions of the pivot mechanism 62, 64, respectively, to extend therethrough. In some embodiments, first and second pivot shafts 63, 65 extend inwardly from the ends of the pedal 32, and through the bearings 80, 82, respectively. Additionally, in other embodiments, the support member 68 can include apertures (not shown) configured to be aligned with the bearings 80, 82, respectively, and also provide support for the pivot mechanisms 62, 64, respectively or the shafts 63, 65, respectively.

[0049] The pivot mechanisms 62, 64 can define pivot axes about which the pedal 32 can pivot. In some embodiments, the pivot axes defined by the pivot mechanism 62, 64 fall along the same axis.

[0050] In some embodiments, the mechanism 60 can also include levers 90, 92. The levers 90, 92 can include first ends 94, 96 engaged with the pedal 32 so as to pivot

therewith. For example, the first ends **94, 96**, can be mounted to the shafts **63, 65**, or the shafts **83, 85** so as to rotate therewith. However, other configurations can also be used.

[0051] The levers **90, 92** can also include distal ends **98, 100**. The distal ends **98, 100** can be connected to one or more members **102, 104** configured to transfer the movement of the pedal **32** between its resting and actuated positions into the movement of the lid **24** between its opened and closed positions.

[0052] For example, in some embodiments, the members **102, 104** can be made from a single rod, connected at their lower ends. For example, a single u-shaped rod can form both the members **102, 104**. However, in the illustrated embodiment, the members **102, 104** are formed from separate rods. The lower ends of the rods **106, 108** extend into apertures defined in the distal ends **98, 100** of the levers **90, 92**. When assembled, the members **102, 104** extend upwardly through the interior of the shell **34**, through the support **68**, through the interior of the shell **36**, through the apertures **46** in the upper support member **38**, and to the lid **24**.

[0053] The upper ends **110, 112** of the members **102, 104** can be configured to interface with the lid **24** so as to pivot the lid **24** relative to the body **22**. For example, in some embodiments, the upper ends **110, 112** can press against a portion of the lid **24** radially offset from a pivot axis defined by the hinge connecting the lid **24** to the body **22**. As such, the radially offset contact between the upper ends **110, 112** and the lid **24** can cause the lid **24** to pivot about the hinge.

[0054] In other embodiments, the lid can include mounting tabs engaging the upper ends **110, 112** in a hinge-type arrangement. As such, the upper ends **110, 112** pivot within the hinge defined by the tabs, and thus move the lid **24** between its opened and closed positions, as the members **102, 104** are moved upward and downwardly in accordance with the movement of the pedal **32**. This type of mechanism **60** is well known in the art, and thus, can be modified according to the shape and size of the overall trashcan **20**.

[0055] In an exemplary configuration, the resting position of the pedal **32** is a position in which the pedal **32** is pivoted upwardly such that the distal ends **98, 100** of the levers **90, 92** are pivoted downwardly. In this position, the members **102, 104** are also pulled into a downward position, which would also correspond to the lid **24** being in a closed position. When a user steps on the pedal **32**, thereby pivoting the pedal **32** downwardly, the levers **90, 92**,

pivoting about the axes defined by the pivot mechanisms **62**, **64** pivot upwardly, thereby lifting the rod members **102**, **104**. As the rod members **102**, **104** rise, the upper ends **110**, **112** of the members **102**, **104** press against the lid **24** or associated tabs, thereby moving the lid **24** from the closed position toward the open position.

[0056] With continued reference to Figure 2, the trashcan assembly **20** can include one or more dampening devices **120**, **122**. The dampening devices **120**, **122** can be any type of dampening device including, for example, but without limitation, rotary dampening devices, friction dampening devices, or fluid damping devices operating with liquid or gaseous working fluids. Other types of dampening mechanisms can also be used.

[0057] In some embodiments, the trashcan assembly **20** can include at least two dampening mechanisms, **120**, **122** arranged so as to provide dampening against the movement of opposite ends of the pedal **32**. The description of the damper **120** set forth below applies to both the dampers **120**, **122**, although only the damper **120** and the components thereof are specifically identified below. Thus, the damper **122** can have a construction that is similar or identical to the damper **120**.

[0058] With reference to Figure 3, the damper mechanism **120** can be attached to a lever **90** in any known manner. In some embodiments, the damper **120** can be connected to the member **102** to thereby connected the damper mechanism **120** to the lever **90**. Alternatively, the damper mechanism **120** can be directly connected to the lever **90**.

[0059] In the illustrated embodiment, the damper mechanism **120** is connected to the lever **90** at an aperture **130**. A connecting member **132** of the damper **120**, such as a pin, extends through the aperture **130**, to thereby connect the lever **90** to the damper **120**. In some embodiments, the damper **120** can be configured to dampen the downward movement of the lever.

[0060] As used herein, the “downward movement” of the lever **90** corresponds to the clockwise pivoting motion of the lever **90** about the pivot axis P defined by the pivot mechanism **62**, as viewed in Figure 3. This downward movement of the lever **90**, i.e., clockwise pivot as viewed in Figure 3 about the axis P corresponds to the movement of the lid **24** from the open position toward the closed position. As such, after a user releases the pedal

32 (Figure 1 and Figure 2) the damper mechanism 20 dampens the downward pivotal movement of the lever 90 and the lid 24.

[0061] The lid 24 and the pedal 32 can be biased toward the closed and resting positions, respectively, by way of any known device or configuration. For example, the weight of the lid 24 can be sufficient to move the lid 24 toward the closed position when nothing (other than gravity) is acting against the pedal 32. Optionally, springs can be added to the trashcan assembly 20, in any known configuration, to bias the lid 24 toward the closed position, and/or the pedal 32 to the resting position.

[0062] Figure 3 also illustrates an optional stopper 140. The stopper 140 can be configured to define a limit of movement for the lever 90. For example, the stopper 140 can be configured to prevent the further downward pivoting of the lever 90 beyond a predetermined point.

[0063] Optionally, the stopper 140 can include an upper surface 142 positioned so as to press against a lower surface 144 of the lever 90. The position of the surface 142 can be arranged to stop the downward pivoting motion of the lever 90 as the lid 24 reaches its closed position.

[0064] In some embodiments, the stopper 140 can be positioned such that its uppermost surface is in a position in which the lower surface 144 of the lever 90 contacts the surface 142 just prior to the lid 24 reaching its fully closed position. As such, the stopper 140 can slow the closing movement of the lid 24 further and prevent the lid 24 from impacting the body 22 as it reaches its closed position. Further, in such a configuration, the stopper 140 can be made from soft and/or flexible materials such as foam rubber. Thus, the position of the stopper 140, its upper surface 142, and the material used to form the stopper 140 can be chosen to achieve the desired performance. In some embodiments, the stopper 140 is supported by the lower member 38 of the base 26. Additionally, in some embodiments, the damper 120 can be mounted to a portion of the support 68. Figure 3 schematically illustrates the damper 120 being mounted to the support 68.

[0065] The positioning of the stopper 140 in the interior of the body 22 can provide further advantages. For example, when any of the moving components of the trash can 20 contact other components, there is the potential that such a contact can generate a noise. Thus,

the lid **24** can generate noise when it contacts the upper support **38** or the liner **40** as the lid **24** reaches the closed position. Because the point of contact is also close to or at the boundary between the interior and exterior of the trash can **20**, and because the lid is often the part of the trash can **20** that is the closest to the ears of a user, it is more likely that a noise generated by the lid **24** making contact with another component will be perceptible by the user.

[0066] Thus, by providing the stopper **140**, or any other device configured to contact a moving component, in the interior of the trash can **20**, any noise generated by contact between such internal components is less likely to be perceptible by the user. Additionally, by placing the stopper **140** near the bottom of the trash can **20**, any noise generated by contacts is also less likely to be perceptible to a user. In operation, the stopper **140** can absorb some of the energy of the movement of the lid **24** toward its closed position, prior to the lid **24** reaching its closed position. This can also aid in reducing or eliminating noise that may be generated by the lid **24** reaching its closed position.

[0067] With reference to Figure 4, the trashcan assembly **20** can also include an anti-sliding mechanism **150**. The anti-sliding mechanism **150** can be configured to prevent or reduce a sliding motion caused by the forces generated when an operator depresses the pedal **32**. In some embodiments, the anti-sliding mechanism **150** can be configured to increase an effective coefficient of friction between the trashcan assembly **20** and a surface upon which the trashcan **20** rests as the pedal **32** is moved from its resting position toward its actuating position.

[0068] For example, but without limitation, the anti-sliding mechanism **150** can be configured to convert the movement of the pedal **32**, from its resting position toward its actuated position into a force pressing a friction member against the surface upon which the trashcan assembly **20** is resting. Such a surface can be, for example, but without limitation, vinyl flooring, wood flooring, carpeting, etc.

[0069] In some embodiments, as illustrated in Figure 4, the anti-sliding mechanism includes an arm **152** connected to a friction device **154**. The friction device **154** can be formed with any type of device that can generate friction at a contact patch between itself and the types of surfaces commonly found in homes, noted above, such as vinyl flooring, wood flooring, carpeting, etc.

[0070] In some embodiments, the friction device 154 can include a contact member 156 made of any rubber, or other material. Further, the contact member 156 can be made of a material or can include a surface texture that generates coefficients of friction with the typical flooring materials that are greater than the coefficients of friction between the other projections on the bottom of the base 26 and those types of flooring materials.

[0071] For example, as noted above, the base 38 can include projections in the form wheels, casters, gliders, and/or other extensions that together support trash can 20 in a stable and upright position on a surface, such as those flooring material surfaces noted above. Thus, the friction device 154 can include at least a portion (e.g., the contact member 156) made from a material or including a surface texture that provides a greater coefficient of friction with the typical flooring materials than the coefficient of friction between the other projections. In embodiments where there are a plurality of different projections on the bottom of the trash can assembly 20, an effective coefficient of friction of the combination of those projections and each flooring material can be determined experimentally, based on the resistance of the trash can 20 against sliding along each of the different surfaces.

[0072] In some embodiments, the contact member can include an engagement member 158 configured to provide engagement between the contact member 156 and the arm 152. In some embodiments, the engagement member 158 can include a shaft portion 160 extending into a central portion of the contact member 156 and an upper flange portion 162. The upper flange portion 162 can be connected to a distal end 164 of the arm 152. However, other configurations can also be used

[0073] A proximal end 166 of the arm 152 can be connected to the pedal 32, the lever 90, or the pivot mechanism 60. In the illustrated sectional view of Figure 4, the proximal end 166 of the arm 152 is attached to a portion of the pivot mechanism 60. In the illustrated embodiment, this portion of the pivot mechanism 60 has a round outer surface.

[0074] The proximal end 166 of the arm 152 extends around a portion of the periphery of the pivot mechanism 60. Additionally, a screw 168 secures the proximal end 166 of the arm 152 to the pivot mechanism 60. The illustrated portion of the pivot mechanism 60 pivots with the lever 90 and the pedal 32 during operation.

[0075] Thus, with continued reference to Figure 4, during operation, when the pedal 32 is moved downwardly from its resting position to its actuated position, the pivot mechanism 60 pivots in a counterclockwise direction (as viewed in Figure 4). As such, the proximal portion 166 of the arm 152 is also pivoted in the same direction. However, because the distal end 164 of the arm 152 is attached to the contact member 156, which is positioned to contact the surface upon which the trashcan assembly 20 sits, the arm 152 is bent into the configuration illustrated in phantom line and identified by the reference numeral 152F. As such, this flexation of the arm 152 generates a downward force identified by the arrow 170. This downward force transfers some or all of the normal force created by the weight of the trashcan assembly 20 and the downward pressing of the pedal 32 by the user, to the contact member 156, thereby raising the coefficient friction existing between the trashcan assembly 20 and the surface which the contact member 156 contacts, i.e., the surface upon which the trashcan assembly 20 rests. This is because, as noted above, the contact member can be configured, by way of the material used to form the outer surface of the contact member 156 or the surface texture of the contact member 156 to have a greater coefficient of friction (with a flooring surface) than that of the other projections on the bottom of the base 38.

[0076] With reference again to Figure 1, when a user depresses the pedal 32 with their foot, occasionally, a user can also push against the pedal 32 generating a rearward sliding force identified by the arrow 172 in Figure 4. Thus, by providing the anti-sliding mechanism 150, an additional friction or “anti-sliding” force can be generated between the contact member 156 and the surface upon which the trashcan assembly 20 rests, to thereby prevent or reduce the rearward sliding motion of the trashcan assembly 20. In some embodiments, the arm 152 is made from a spring steel. However, other materials can be used. Additionally, the shape and configuration of the anti-sliding mechanism 150 can be designed, by one of ordinary skill in the art, to provide the desired amount of friction.

[0077] With reference to Figures 5-8, the damper mechanism 120 can be a fluid type damper operating with air as the working fluid. In the illustrated embodiment, the damper mechanism 120 can include a housing 200. The housing 200 can be mounted anywhere the trashcan assembly 20. In some embodiments, as illustrated schematically in Figure 3, the

housing 200 of the damper mechanism 120 can be mounted to the support member 68 of the base 26.

[0078] The housing 200 can define a cylinder in which a damper piston 202 can reciprocate. The dampening function of the dampening mechanism 120 is achieved by way of the resistance of the flow of a fluid, such as air, into and out of the housing 200. This can generate sufficient damping forces for slowing the closing of the lid 24. Such forces can be large.

[0079] The piston 202 can include a piston head 203 and a piston rod extending from the piston head 203 and outwardly from a lower end of the housing 200. The piston rod 205 can include an aperture 207 configured to allow the piston rod 205 to be pivotally connected to another member, such as the rod 132 or another member.

[0080] With continued reference to Figure 5, when the pedal 32 (Figure 1) is pressed toward the open position, the piston 202 inside the damper housing 200 is moved toward its uppermost position. With reference to Figure 2, in the open position, the members 102, 104 hold the lid 24 toward in the open position, and the rear ends 98, 100 of the levers 90, 92 are also raised with respect to the foot pedal 32. When the rear of the levers 90, 92 are raised, the piston 202 is pushed upwardly inside the damper housing 200 by way of its connection to the lever 90, to the uppermost position illustrated in Figure 8.

[0081] When the force on the pedal 32 is released, the combined forces from the weight of the lid 24 (if applicable), the weight of other components connected to the lid 24 and/or other biasing devices configured to bias the lid 24 toward the closed position, push the members 102, 104 downwardly. As the members 102, 104 move downwardly, they push the rear ends of the levers 90, 92 downwardly, thereby pulling the piston 202 downwardly within the housing 200 (Figure 5). However, the relative pressure between the atmosphere acting on the bottom of the piston 202 and the air trapped between the top of the piston 202 and the top of the housing 200 opposes the immediate downward motion of the piston 202 as the piston begins to move downwardly, and thus opposes the downward motion of the rear ends of the levers 90, 92, and thus opposes the downward motion of the lid 24 toward its closed position.

[0082] In some embodiments, the piston 202 can be configured to provide less resistance to the upward movement of the piston 202 within the housing 200 but provide greater

resistance against the downward movement of the piston **202** within the housing **200**. This can be accomplished in any known manner.

[0083] In the illustrated embodiment, and with additional reference to Figures **6** and **7**, the piston **202** can be provided with a lip seal **210**. In some embodiments, the lip seal **210** can be configured to operate similarly to a check valve. Thus, the lip seal **210** can have any configuration that can provide a similar function.

[0084] In the illustrated embodiment, the lip seal **210** is generally annular in shape, having an inner wall **212** and an outer wall **214** connected by a top wall **216**. The outer wall **214** can include an upper portion **218** that extends generally parallel to the inner wall **212** and a projecting portion **220** that is biased to extend radially outwardly relative to the upper portion **218**. As such, the outer diameter **220** defined by the upper portion **218** is slightly smaller than the diameter **222** defined by the projecting portion **220**. Additionally, the ramped configuration of the projecting portion **220** (when in a relaxed state) relative to the upper portion **218** helps to achieve the check valve type functionality of the lip seal **210**.

[0085] For example, with reference to Figure **5**, as the piston **202** moves upwardly within the housing **200** in the direction of arrow **U**, air **A** flows downwardly along the inner walls of the housing **200**, past the projecting portion **220** of the lip seal **210**. Due to the ramped shape of the projecting portion **220**, the pressure generated within the upper portion of the housing **200** above the piston **202** helps deflect the projecting portion **220** radially inwardly, thereby allowing the air **A** to pass thereby without generating a larger resistance.

[0086] However, when the piston **202** moves downwardly within the housing **200**, the air pressure in the space above the piston **202** drops relative to the pressure of the atmosphere, thereby causing the projecting portion **220** to further expand against the inner walls of the housing **200**. This generates additional resistance to the flow of air **A_u** into the space above the piston **202**. As such, the lip seal **210** generates more resistance to the downward movement of the piston **202** than against the upward movement of the piston **202**.

[0087] In some embodiments, the lip seal **210** can be lubricated with graphite powder. Such lubrication with graphite powder and the construction of dampers, which can be applied to the present dampers **120**, **122**, are disclosed in U.S. Patent Nos. **6,513,811** and **6,726,219**, the entire contents of both of which, including the specific portions including the

descriptions of damper design and lubrication with graphite powder, are hereby incorporated by reference. Additionally, the size of the dampening mechanism 120 can be chosen by the designer to provide the desired functionality and performance.

[0088] For example, with reference to Figure 8, the height of the housing 200, which determines the length of the maximum vertical movement of the piston 202 within the housing 200, can be chosen to accommodate the maximum vertical displacement of the point at which the dampening mechanism 120 is attached to the lever 90 (Figure 3). Additionally, the diameter of the housing 200 and the type of lip seal 210 used affects the resistance generating during the downward movement of the piston 202. Thus, these dimensions can be chosen to provide the desired dampening characteristics.

[0089] Further advantages can also be achieved where the size of the housing 200 and the position at which the housing 200 is mounted within the assembly 20 can be adjusted to provide desired characteristics of the motion of the lid 24 during its closing movement. For example, it has been found that if the housing 200 is mounted in a position where the piston 202 is spaced excessively far from the top of the housing 200 when the piston 202 is at its maximum vertical position, the lid 24 can initially move too quickly from its fully opened position toward its closed position. Such an initial quick movement can cause the lid 24 to bounce during its downward movement.

[0090] However, if the mounting position of the housing 200 is adjusted so that the piston 202 is closely spaced relative to the top of the housing 200 when the piston 202 is at its maximum upper position (Figure 8), the damper provides additional dampening, at least initially, thereby providing a slower, more aesthetically pleasing motion.

[0091] For example, by adjusting the position of the housing 200 such that a spacing between the piston 202 and the top of the housing 200 when the piston 202 is at its maximum position, when the foot pedal 32 is released, the lid 24 can begin to move very slowly initially, and slowly accelerate to an acceptably slow closing speed, such that the lid 24 does not make an excessive loud noise when it finally comes to rest against the support 38. In some embodiments, the spacing 240 can be equal to or less than about 10% of the total movement of the piston 202. The initial movement of the piston 202 is further slowed at the spacing 240 is about 5% or less of the total movement of the piston 202. Finally, mounting the housing 200

such that the spacing is about 4% or less of the total movement of the piston 202 provides further slowing, and thus achieves a more aesthetically pleasing movement.

[0092] A designer can choose the appropriate housing, piston, and lip seal combination to achieve the desired closing speed. Thus, in some embodiments, at least one of the lid 24, housing 200, piston 202, lip seal 210, pedal 32, and position of the pivot mechanism 62, 64 can be configured to achieve the desired closing speed. In some embodiments, for example, but without limitation, the above parameters can be chosen to achieve a closing speed of the lid of about 5 seconds from the moment a user removes their foot from the pedal 32.

[0093] With reference again to Figure 2, the dampening mechanism 122 can be constructed and attached to the lever 92 in the same manner that the dampening mechanism 120 is attached to the lever 90. Additionally, the dampening mechanism 122 can be configured to provide approximately the same dampening performance as the dampening mechanism 120.

[0094] Thus, when the pedal 32 is actuated by a user, for example, when a user steps on the pedal 32 to move the pedal 32 from its resting position, pivoting downwardly toward its actuated position, the pistons within the dampening mechanisms 120, 122 are moved to their respective uppermost positions. During this motion, due to the arrangement of the lip seals 210 in each of these dampening mechanisms 120, 122, the dampening mechanisms 120, 122 provide little resistance to this opening motion. However, when the pedal is released by the user, the dampening mechanisms 120, 122 provide essentially the same dampening forces against the movement of the levers 90, 92. Thus, the dampening forces are applied more equally and more balanced to the pedal 32. As such, the movement of the pedal 32 from its actuated position back towards its resting position is more uniform and is less likely to allow the pedal 32 to remain in a position that is twisted relative to the body 22.

[0095] With reference to Figure 1, the lid 24 can also include a filtration mechanism 260. Figure 9 is a schematic representation of the air filtration device 260, which is incorporated into the lid 24 in the illustrated embodiment.

[0096] As schematically shown in Figure 9, the lid can include an outer lid member 262, an air guide 264 and a filter holder 266. The outer lid member 262 can be formed in any known manner. In some embodiments, the outer lid member 262 is formed from a piece of sheet metal, such as stainless steel. However, other materials can also be used. In the

illustrated embodiment, the outer lid member **262** is solid and does not include any air holes. However, other configurations can also be used in which the outer lid member **262** includes air holes, and/or other features.

[0097] As shown in Figure 9, an outer periphery **268** of the outer lid member **262** includes a shoulder **270**. In the illustrated embodiment, the shoulder **270** extends downwardly from the outer periphery **268** of the outer lid member **262**.

[0098] The air guide **264** can include an upper outer peripheral shoulder **272**. In the illustrated embodiment, the upper outer peripheral shoulder **272** extends around the entire periphery of the air guide **264**. Additionally, the outer surface of the upper outer peripheral shoulder **272** is configured to sit within the shoulder **270** of the outer lid member **262**.

[0099] In some embodiments, the fit between the upper outer shoulder **272** and the shoulder **270** can form a generally air resistant seal. However, it is not necessary for the shoulder **272** and the shoulder **270** to form an air resistant seal. The contact and or close spacing between the shoulders **272**, **270** can be sufficiently continuous to significantly resist the flow of air therebetween. Additionally, in some embodiments, an adhesive or other sealant can be used to form a seal between the shoulders **270**, **272**. With the air guide **264** fit with the outer lid member **262**, a space **274** between the outer lid member **262** and the air guide **264**.

[0100] The air guide **264** can also include an inner aperture **276**. Additionally, the air guide **264** can include a filtration device **278** fit over the aperture **276**. In some embodiments, the filtration device **278** can include an filter member **280** and a filter housing **282**.

[0101] The filter member **280** can be any type of known filter device, such as those including activated charcoal. Preferably, the filter device **280** is configured to remove odors from air, such as those odors normally generated or discharged by common household trash.

[0102] The filter housing **282** can include an internal cavity designed to contain the filter device **280** and to seal against the aperture **276**. Additionally, the cover **282** can include one or more apertures **284** configured to allow air to move from the exterior into the interior of the cover **282**. Further, the cover **282** can be configured to form an additional seal around the periphery of the filter member **280** such that air entering the aperture **284** through the cover **282**

will pass through the filter 280 before passing to the space 274. The movement of the air in such a manner is described in greater detail below.

[0103] A lower surface 290 of the air guide 264 can include an additional inner peripheral shoulder 292. The inner peripheral shoulder 292 can be configured to define an outer peripheral shape that is complementary to an inner peripheral shape of an upper end 294 of the liner 40. As such, when the lid 24 moves toward its closed position, the shoulder 292 can move into close proximity and/or make contact with the inner peripheral surface 294 of the liner 40. This can help in guiding the air from the interior of the trashcan assembly 20, into the filtration device 266, into the space 274, described in greater detail below. This close proximity or contact between the shoulder 292 and the inner peripheral surface 294 can also form an air resistant seal when the lid 24 is in its fully closed position, which can further aid in guiding the air from the interior of the trashcan assembly 20, into the filtration device 266, into the space 274.

[0104] The air guide 264 can also include an outer downwardly extending shoulder 300. The outer downwardly extending shoulder 300 can extend around the entire periphery of the air guide 264. Additionally, the outer downwardly extending peripheral shoulder 300 can be sized and shape to move into close proximity and/or make contact with the upwardly extending wall 50 (Figure 1) of the upper support 38, and in some embodiments, form an air resistant seal. The air guide 264 can also include apertures 302 disposed outwardly from the shoulder 292

[0105] During operation, for example, as the lid 24 moves from its open position toward its closed position, a slight compression of the air within the liner 40 can be generated. For example, when the lid 24 is in its open position, the air within the liner 40, existing within and above any trash that may be contained in the liner 40, is at atmospheric pressure. However, as the lid 24 pivots downwardly toward its closed position, and as the various shoulders at the periphery of the lid 24 come into the vicinity of corresponding shoulders and surfaces on the body 22, a positive air pressure can be created within the liner 40. On known trashcan designs with flat lids, this would typically cause a puff of air to be discharged from the interior of the trashcan assembly 20. If the air within such a trashcan contains strong odors, such odors would

be pushed out into the room in which such a trashcan is positioned and likely toward a user of such a trashcan.

[0106] With reference to Figure 10, the trashcan assembly 20 can be configured to use this momentary pulse of air to help guide air through the filtration device 260.

[0107] For example, as illustrated in Figure 10, as the lid 24 approaches its closed position, the shoulder 292 of the air guide comes into close proximity and/or into contact with the upper inner peripheral surface 294 of the liner 40. Thus, air A within the liner 40 is trapped except for the apertures 284. Thus, as the pressure within the liner 40 rises during this downward movement of the lid 24, air A, due to its positive pressurization within the liner 40, is pushed through the apertures 284, and through the filter element 280 into the space 274. As such, the odors from the air can be removed by the filter element 280.

[0108] As noted above, the air guide 264 also includes apertures 302 disposed outwardly from the shoulder 292. Thus, the air A flowing through the apertures 284 and the filter member 280 can continue to flow through the space 274 and out of the space 274 through the apertures 302.

[0109] In some embodiments, a trashcan assembly 20 can be configured to allow the air passing through the apertures 302 to be discharged directly to the atmosphere. For example, the shoulder 300 can be provided with apertures.

[0110] However, further advantages can be achieved if the air filtration device 260 is configured to guide the air which has moved through the filter element 280 into a further interior compartment of the trashcan assembly 20, for example, between the shell 36 and the liner 40.

[0111] As noted above, the lower outer peripheral shoulder 300 of the air guide 264 can be configured to move into close proximity and/or contact with the upwardly standing wall 50 of the upper support 38. As such, as the lid 24 moves downwardly toward its closed position, the shoulder 300 can form a seal and/or an area of higher resistance to airflow. As such, air A flowing through the space 274 can exit the space 274 through the aperture 302, and then apertures 42 disposed in the upper support member 38 (described above with reference to Figure 1).

[0112] The space between the shell 36 and the liner 40, identified by the reference numeral 320, can be open to the atmosphere. For example, this space 320 can be open to the atmosphere through various holes in the base 26. For example, the base 26 can include a plurality of various holes and apertures in the support plate 38 (as illustrated in Figure 2). Additionally, the shell 36 can include an aperture 321 (Figure 2) configured to perform as a handle for carrying the trashcan 20, and/or other apertures can also be provided.

[0113] Thus, as the lid 24 closes, air A can be pumped from the interior of the liner 40, through the filter element 280, and into the space 274, and the air A can be further pumped or urged downwardly into the interior of the trashcan assembly 20, such as the space 320 between the liner 40 and the shell 36. This can provide a further advantage in that the user experiences a smaller or no puff of air as the lid 24 closes. Additionally, if the user has not inserted a filter element 280 into air filtration device 260, or if the air filter element 280 has exceeded its useful lifespan, and can no longer remove odors from the air A, the user is not subjected to a puff of air filled with trash odors. Rather, this odor filled air is pumped downwardly into the interior of the trashcan and leaks out in various places near the base or other apertures. Thus, even when the air filtration device does not filter any odors from the air, it directs the “puff” of air into the interior of the body 22, thereby deflecting at least some of that flow of air away from the user.

[0114] Figures 1, 2, 11 and 12 illustrate a modification of the air filtration device illustrated in Figures 9 and 10. Thus, the air filtration device illustrated in Figures 11 and 12, along with its components corresponding to that of Figures 9 and 10, are identified with the same reference numerals A except that a letter “A” has been added thereto. Thus, the construction and operation, and effects of the components described above apply to the device 260A described below, except as specifically noted below.

[0115] As shown in Figure 11, the cover 282A includes an upper peripheral edge 360, having an outer dimension that is smaller than inner dimension of the aperture 276A of the air guide 264A. As such, the cover 282A generally fits within the aperture 276A.

[0116] With reference to Figure 12, the edge 360 can include a plurality of apertures or notches 362. As such, when the cover 282A is inserted into the aperture 276A, it may make contact with an inner surface 364 of the outer lid member 262A. Thus, the notches 362 allow

air to flow outwardly into the space 274A even if the cover 282A makes contact with the inner surface 364. Other configurations can also be used. For example, the notches 362 can be provided in a wall fixed to the air guide 264 and the removable portion of the cover can attach to a periphery of the aperture 276A.

[0117] Additionally, with continued reference to Figure 12, the air guide 264A can include a plurality of stiffening ribs 370 extending from the outer peripheral shoulder 272 inwardly toward the aperture 276A. This provides an additional benefit in that when the lid is closed and air is pumped into the space 274A, the surface of the air guide 264A surrounding the aperture 276A can be subjected to forces that would tend to deflect the surface of the air guide 264A due to the positive pressure within the liner 40. Similarly, as the lid 24 is opened, a slight vacuum can be created within the liner 40, thereby causing the surfaces of the air guide 264A surrounding the aperture 276A to tend to deflect toward the interior of the liner 40. These movements of the surfaces can cause failures and/or noises within the trashcan assembly 20A. Thus, the stiffening ribs 370 help reduce or prevent such noises or failures.

[0118] With reference to Figures 13-15, the trashcan receptacle 20 can be provided with at least one dampening mechanism configured to provide dampening against the movement of the lid 24 in both the opening and closing directions. Such a dampening mechanism can be constructed in any known manner. By providing dampening in both the opening and closing directions, the trashcan 20 can avoid certain additional undesirable noises and/or damage.

[0119] For example, a user may intentionally or accidentally step on the pedal 32 with significantly more force than necessary to open a lid 24. This can cause a lid 24 to open at a great speed, and thereby raise the possibility that the lid 24 impacts a wall or another nearby body. Such an impact can cause a large noise. Additionally, such a movement of the lid 24 can damage the hinge mechanism connecting lid 24 to the body 22.

[0120] The dampening mechanism 120A illustrated in Figures 13-15 is a modification of the dampening mechanisms 120, 122 described above with reference to Figures 2 and 5-8. Thus, the dampening mechanism 120A of Figures 13-15 is identified by the same reference numeral, except that a capital letter "A" has been added thereto. Thus, the

corresponding components can be constructed and operated in the same way as described above, except as specifically described below.

[0121] As illustrated in Figures 13 and 14, the dampening mechanism 120A includes two lip seals 210A and 400. The lip seal 400 can be constructed in the same manner as lip seal 210A. In other embodiments, the lip seal 400 can be different from the lip seal 210A, for example, if it is desired to provide different dampening performance against the upward motion of the piston than the downward motion of the piston. However, for convenience, the same reference numerals used to identify various parts of the lip seal 210A are used to identify the same or similar parts of the lip seal 400. Thus the configuration of the lip seal 400 can be the same or similar to the lip seal 210A, except as noted below.

[0122] With reference to Figures 14 and 15, the piston 202A includes two peripheral grooves 402, 404 sized and shaped to retain the lip seals 210A, 400, respectively. A disk-shaped wall 406 can be disposed between the grooves 402, 404, and thus between the lip seals 210A, 400. As illustrated in Figure 15, the disk 406 includes a large aperture 408 which allows for airflow between the lip seals 210A, 400, described in greater detail below.

[0123] With such a configuration, as noted above, the lip seal 210A resists the downward movement of the piston 202A while the second lip seal 400 resists the upward movement of the piston 202A. As noted above, with regard to this description of the lip seal 210, the various parts of the lip seals 210A, 400, the lubrication used, etc., can be adjusted to provide the desired dampening characteristics.

[0124] Further advantages, including greater consistency in performance, can be achieved by providing the dampening mechanism 120A with at least one metering channel 410, 412, to allow air to leak around at least one of the lip seals 210, 400.

[0125] For example, with reference to Figure 15, the piston 202A includes a lower wall 420 cooperating with the central disk 406 to define the channel 404. Additionally, the piston 202A includes an upper wall 422 cooperating with the disk 406 to define the channel 402. However, other configurations can also be used.

[0126] As shown in Figure 13, the upper wall 216A of the lip seal 210A rests against the downwardly facing surface of the upper wall 422. Similarly, the upper wall 216A of the lip seal 400 rests against the upwardly facing wall of the lower wall 420. Across the contact

patch between the upper wall **216A** and the downwardly facing surface of the upper wall **422**, the metering channel **412** extends so as to allow airflow between the exterior of the piston, and the space above the top of the piston **202A** and the interior of the piston **202A**. Similarly, the metering channel **410** allows the flow of air from the exterior of the piston, beneath the upper wall **416A**, of the lip seal **400**, and into the interior of the piston.

[0127] Additionally, as noted above, the central disk **406** includes an aperture or notch **408** thus, air can leak from the atmosphere, beneath the wall **216A** of the lip seal **400**, into the interior of the piston, upwardly through the notch **408**, into the metering channel **412**, then outwardly above the wall **216A** of the lip seal **210A**, and into the space within the housing **200A** above the top of the piston **202A**. As such, the metering channels **410**, **412** can limit the amount of dampening generated by the lip seals **210A**, **400**.

[0128] In an exemplary but nonlimiting embodiment, the housing **200A** can be made from a material commercially available under the trade name Acetal Delrin with 10% Teflon added. The piston **202A** can also be made from the material known as Acetal Delrin. Further, the lip seal **210A**, **400** can be made from graphite impregnated nitrile. Other materials can also be used.

[0129] Further, in some examples, the metering channels **410**, **412** can have a width of approximately **0.15** mm and a depth of approximately **0.15** mm. Additionally, depending on the performance desired, a plurality of metering channels **410**, **412**, can be provided on each of the walls **420**, **422**.

[0130] Additional advantages can be achieved by providing the dampening mechanism **120A** with the ability to provide variable dampening in at least one of its directions of movement. For example, when a user initially steps on the pedal **32** of the trashcan assembly **20**, the lip seal **400** will oppose the upward movement of the piston **202A** within the housing **200A** due to its inverted orientation relative to the lip seal **210A**. This will help prevent an excessively fast opening speed of the lid **24**.

[0131] Further, it has been found that it can be advantageous to provide a reduced dampening force against the initial movement of the pedal **32** toward its opening position. For example, with regard to some trashcans, such as a trashcan assembly **20** illustrated in Figure 1, due to the pivoting arrangement of the lid **24**, a user must apply the most amount of force to

move the pedal **32** when the lid **24** is closed, as compared to the forces required to move the pedal **32** through the remainder of its opening motion. This is because when the lid **24** is orientated in its closed position, the weight of the lid **24**, acting at its center of gravity, provides the largest torque against the pivoting movement of the lid **24** towards its open position. Thus, the force required to move the pedal **32** through its initial portion of its movement toward its opening position is greatest when the lid **24** is closed.

[0132] However, in operation, as the lid **24** pivots toward its open position, the horizontal position of the center of gravity moves closer to the pivot axis, and thus, the torque generated by the weight of the lid **24** decreases proportionally. As the center of gravity of the lid **24** moves directly over the pivot axis, the torque created by the weight of the lid falls to zero. Thus, as the lid **24** pivots toward its open position, depending on the force applied to the pedal, the lid can achieve an excessive angular velocity and thus an excessive angular momentum. This can result in damage to the lid **24**, a hinge connecting the lid **24** to the trashcan assembly **20**, a nearby wall, or other damage.

[0133] Further, if a trashcan includes a feature, such as a filtration device, which may generate a vacuum during the initial opening movement of the lid, the force required to move the pedal **32** from its initial resting position can be even greater due to the additional weight to the filtration device. Thus, it can be advantageous to provide a dampening mechanism that can reduce the initial dampening forces applied during the initial movement of the lid toward its opening position. Such a reduction in the initial movement of a pedal can be achieved through any known device, including, for example, but without limitation, lost motion devices, the sizing and configuration of the dampening device itself, and/or other devices.

[0134] With continued reference to Figures 13-15, the dampening mechanism **120A** can be configured to provide a variable or changing dampening force over the range of motion of the piston **202A** relative to the housing **200A** in at least one direction.

[0135] In some embodiments, this variable dampening can be provided by providing the housing **200A** with a zone **460** having a greater inner diameter than the remainder of the housing **200A**. Additionally, the housing **200A** and the connection of the piston **202A** with the member **102** can be arranged such that the outer projection **220A** of the lip seal **400**

contacts the inner surface of the housing 200A in the zone 460 when the pedal 32 is in its resting position.

[0136] For example, but without limitation, the inner diameter of a portion of the zone 460 can be sufficiently greater than the remaining inner diameter of the housing 200A, that the projection 220A of the lip seal 400 loses contact with at least a portion of the inner surface of the zone 460. Thus, when the pedal 32 is depressed by a user, initially, the lip seal 400 generates greatly reduced or no dampening force against the upward movement of the piston 202A within the housing 200A. In some embodiments, the increase in diameter of the inner surface of the housing 200A in the zone 460 is gradual. Thus, as the projection 220A of the lip seal 400 moves from the lowest portion (as viewed in Figure 13) of the zone 460, upwardly, the projection 220A will remain oriented in the desired position, gradually regain contact with the inner surface of the housing 200A and generate dampening force as it leaves the zone 460.

[0137] In some embodiments, the zone 460 can have the same diameter as the other parts of the inner surface of the housing 410, and the damper 120A can be configured to provide reduced dampening against the opening movement of the lid 24 with other techniques. For example, the overall size and/or proportions, including for example, but without limitation, the total volume of the housings 200, 400, the stroke (i.e. the total distance the pistons 202, 202A travel within the corresponding housing), the ratio of the stroke to the diameter of the housing, the compressibility of the working fluid (e.g., air and other gasses are “compressible fluids” and most liquids are “non-compressible”), can affect the dampening provided during the initial movement of the lid 24 toward the open position. Thus, in some configurations, one of these parameters can be determined to provide the desired reduced dampening for the desired portion of the initial movement of the lid 24 toward its open position.

[0138] As with the other dimensions of the housing 200A and the lip seal 210A, 400, the configuration and length of the zone 460 can be adjusted to provide the desired dampening characteristics.

[0139] Although these inventions have been disclosed in the context of certain preferred embodiments and examples, it will be understood by those skilled in the art that the present inventions extend beyond the specifically disclosed embodiments to other alternative

embodiments and/or uses of the inventions and obvious modifications and equivalents thereof. In addition, while several variations of the inventions have been shown and described in detail, other modifications, which are within the scope of these inventions, will be readily apparent to those of skill in the art based upon this disclosure. It is also contemplated that various combinations or sub-combinations of the specific features and aspects of the embodiments can be made and still fall within the scope of the inventions. It should be understood that various features and aspects of the disclosed embodiments can be combined with or substituted for one another in order to form varying modes of the disclosed inventions. Thus, it is intended that the scope of at least some of the present inventions herein disclosed should not be limited by the particular disclosed embodiments described above.

THE EMBODIMENTS OF THE INVENTION IN WHICH AN EXCLUSIVE PROPERTY OR PRIVILEGE IS CLAIMED ARE DEFINED AS FOLLOWS:

1. A trash can, comprising:

a body defining an interior space, the body comprising a base portion and an upper body portion;

a lid moveably mounted to the body so as to be moveable between open and closed positions;

at least first and second pedal pivots supported by the body and disposed on opposite lateral positions of a side of the body;

a pedal moveably mounted to the body with the first and second pedal pivots such that the pedal is moveable between resting and actuated positions, the pedal being mechanically interfaced to the lid so as to move the lid from its closed position to its open position when the pedal is moved from its resting position to its actuated position, the pedal comprising a pedal member extending laterally across a side of the body, a first end of the pedal member pivotally supported by the first pedal pivot and a second end of the pedal member being pivotally supported by the second pedal pivot;

a first motion damper connected to the first end of the pedal member; and

a second motion damper connected to the second end of the pedal member, wherein the first and second dampers are configured to dampen at least a first movement of the pedal member from the actuated position to the resting position.

2. The trash can according to Claim 1 additionally comprising first and second levers disposed within the body and connected to the first and second ends of the pedal member, respectively, such that the first and second levers move with the pedal as the pedal moves between the resting position to the actuated position.
3. The trash can according to Claim 2, wherein the first and second motion dampers are connected directly to the first and second levers, respectively, thereby connecting the first and second motion dampers to the first and second ends of the pedal member.
4. The trash can according to Claim 1, wherein the first and second motion dampers are configured to provide approximately the same dampening forces against the movement of the lid from the open to the closed position.
5. The trash can according to Claim 1, wherein at least the first motion damper is configured to provide dampening forces against the movement of the lid from the closed to the open position.
6. The trash can according to Claim 1, wherein the pedal member is generally U-shaped.
7. The trash can according to Claim 1, wherein the first and second motion dampers are separate from each other and mounted adjacent opposite sides of the body.
8. A trash can, comprising:
 - a body defining an interior space, the body comprising a base portion and an upper body portion;
 - a pedal pivotally mounted to the body, so as to be moveable at least between resting and actuated positions;
 - a friction device configured to increase a resistance against a sliding motion of the trash can across a surface as the pedal is moved between the resting and

actuated positions, the friction device being connected to the pedal such that a force pressing the friction device against a surface upon which the trash can rests increases as the pedal is moved to its actuated position.

9. The trash can according to Claim 8, wherein the friction device comprises a friction member arranged to contact a surface upon which the body is resting so as to produce a first coefficient of friction between the friction member and the surface, the first coefficient of friction being greater than a second coefficient of friction produced between the friction member and the surface when the pedal is in the resting position.
10. The trash can according to Claim 8, where the friction device comprises a leaf spring connecting the friction member to the pedal.
11. The trash can according to Claim 10 additionally comprising a friction member, wherein the pedal is mounted to the body with a pivot device defining a pivot axis of the pedal, a first end of the leaf spring being connected to the pivot device such that the first end of the leaf spring is moved in an arc around the pivot axis as the pedal is pivoted about the pivot axis, thereby bending the leaf spring so as to increase a force pressing the friction member against the surface.
12. The trash can according to Claim 8, wherein the friction device is configured to produce reduced friction with the surface when the pedal is in the resting position so as to allow the trash can to slide easily across the surface.
13. A trash can, comprising:
 - a body defining an interior space, the body comprising a base portion and an upper body portion;
 - a lid moveably mounted to the body, the lid being moveable between open and closed positions;

at least one motion damper configured to dampen the movement of the lid from the open position toward the closed position and to dampen the movement of the lid from the closed position to the open position.

14. The trash can according to Claim 13, wherein the at least one motion damper provides a first dampening response over a first range of motion of the lid from the open position toward the closed position and wherein the at least one motion damper provides a second dampening response over a second range of motion of the lid from the closed position toward the open position, wherein the second range of motion is smaller than the first range of motion.
15. The trash can according to Claim 13, wherein the at least one motion damper is configured to provide a first dampening response against the motion of the lid from the open position toward the closed position and a second dampening response against the motion of the lid from the closed position toward the open position, the first dampening response being different from the second dampening response.
16. The trash can according to Claim 14 additionally comprising a pedal mounted to the body so as to be movable between a resting position and an actuated position, linkage assembly extending between the pedal and the lid so as to transfer the motion of the pedal from the resting position to the actuated position to the lid so as to move the lid from the closed position to the open position as the pedal is moved from the resting position to the actuated position.
17. The trash can according to Claim 14 additionally comprising a pedal mounted to the body so as to be pivotable between a resting position and an actuated position and at least one rod having first and second ends, the first end connected to the pedal and the second end connected to the lid such that the rod pushes the lid from the closed position to the open position as the pedal is moved from the resting position to the actuated position.

18. The trash can according to Claim 14, wherein the least one motion damper comprises a cylinder, a piston disposed within the cylinder so as to reciprocate within the cylinder, a first seal mounted to the piston and configured to provide a first one-way valve between the piston and the cylinder so as to allow air to pass through the one-way valve in a first direction and to resist the movement of air through the one-way valve in a second opposite direction, and a second seal mounted to the piston and configured to provide a second one-way valve between the piston in the cylinder so as to allow air to pass through the second one-way valve in the second direction and to resist the movement of air through the one-way valve in the first direction.
19. The trash can according to Claim 14, wherein the at least one motion damper comprises a cylinder, a piston, a first lip seal defining a first one-way seal between the piston and the cylinder and a second lip seal defining a second one-way seal between the piston and the cylinder, the cylinder having a first diameter corresponding to a first range of movement of the piston within the cylinder and a second larger diameter corresponding to a second range of movement within the cylinder, the at least one motion damper being connected to the lid such that at least one of the first and second lip seals moves into contact with the second larger diameter during a movement of the lid between the open and closed positions.
20. The trash can according to Claim 19, wherein the piston includes at least one metering channel configured to allow air to leak past at least one of the first and second lip seals.
21. A trash can comprising:
- a body defining an interior space, the body comprising a base portion and an upper body portion;
 - a lid movably mounted to the body so as to be movable between opened and closed positions;

an air filtration device mounted to the trash can;

an air guide mounted to the trash can and configured to guide air through the air filtration device and then downwardly into the interior space as the lid moves from the open position toward the closed position.

22. The trash can according to Claim 21 additionally comprising a liner supported within the body, the liner comprising an upper peripheral surface extending around an open upper end of the liner, wherein the air guide is configured to cooperate with the upper peripheral surface of the liner to guide air downwardly into the interior space of the body.
23. The trash can according to Claim 22, wherein the body comprises an outer shell, and wherein the air guide is configured to guide air from the filtration device and into a space between the liner and the outer shell.
24. The trash can according to Claim 21, wherein the lid and the air guide are assembled into an integral unit such that the air guide moves with the lid between the open and closed positions.
25. The trash can according to Claim 21 additionally comprising a liner supported within the interior space of the body, the liner defining a receptacle space within the interior space of the body, wherein the air guide defines a chamber separated from the interior space of the body and the receptacle space, an inlet communicating the receptacle space with the chamber when the lid is in the closed position and an outlet communicating the chamber with exterior of the receptacle space when the lid is in the closed position.
26. The trash can according to Claim 25, wherein the outlet communicates the chamber with the interior space of the body that is separated from the receptacle space by the liner when the lid is closed.

27. The trash can according to Claim 25, wherein the air guide is configured to contact at least a portion of the liner to thereby form a first air resistant seal between the inlet and outlet of the air guide on an exterior of the chamber, the inlet, the air filtration device, the chamber, and the outlet defining an airflow path around the air resistant seal.
28. The trash can according to Claim 27, wherein the air guide is also configured to contact at least a portion of the body disposed outwardly from the liner and the outlet to thereby form a second air resistant seal, the outlet being disposed between the first and second air resistant seals.

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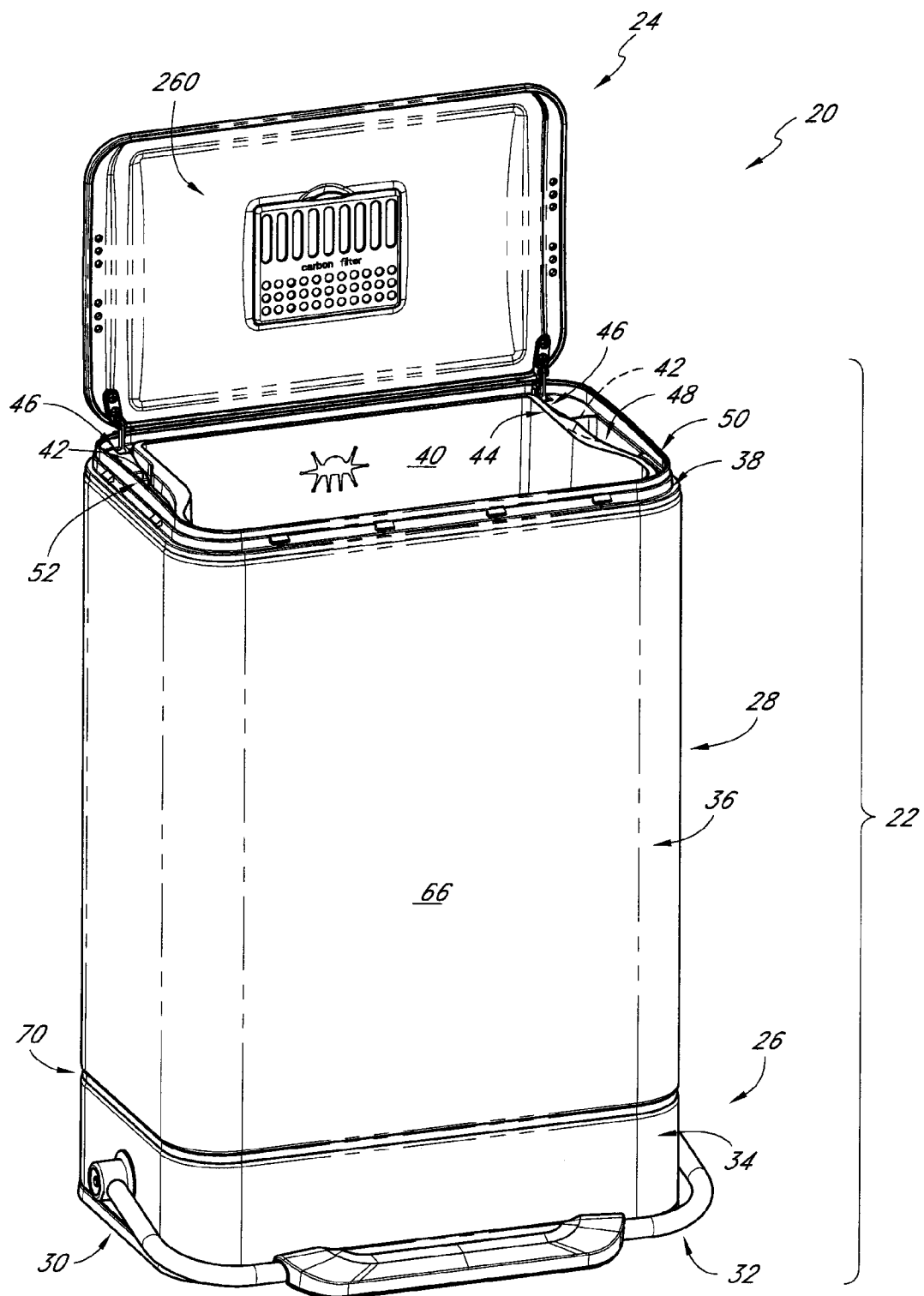


FIG. 1

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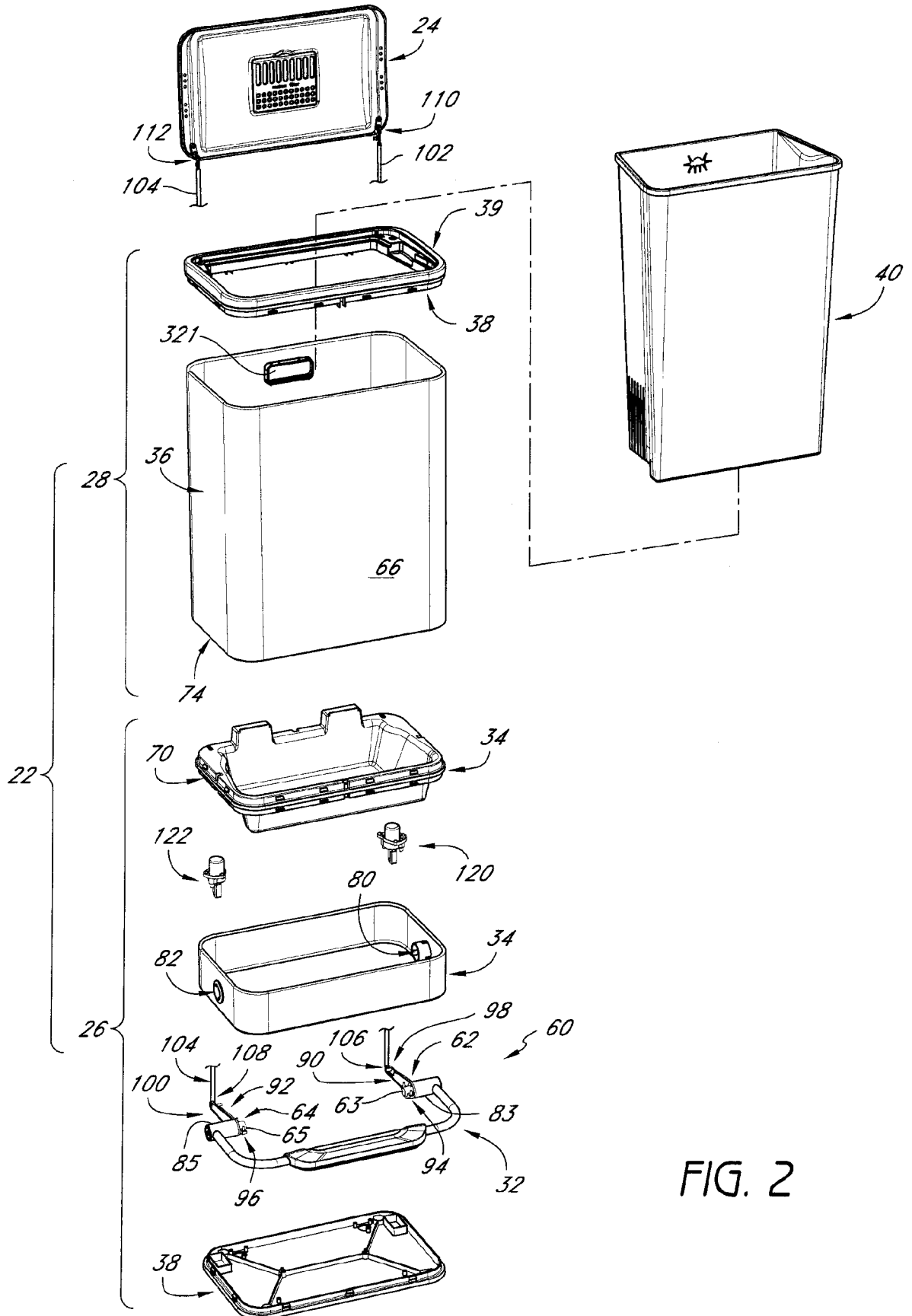


FIG. 2

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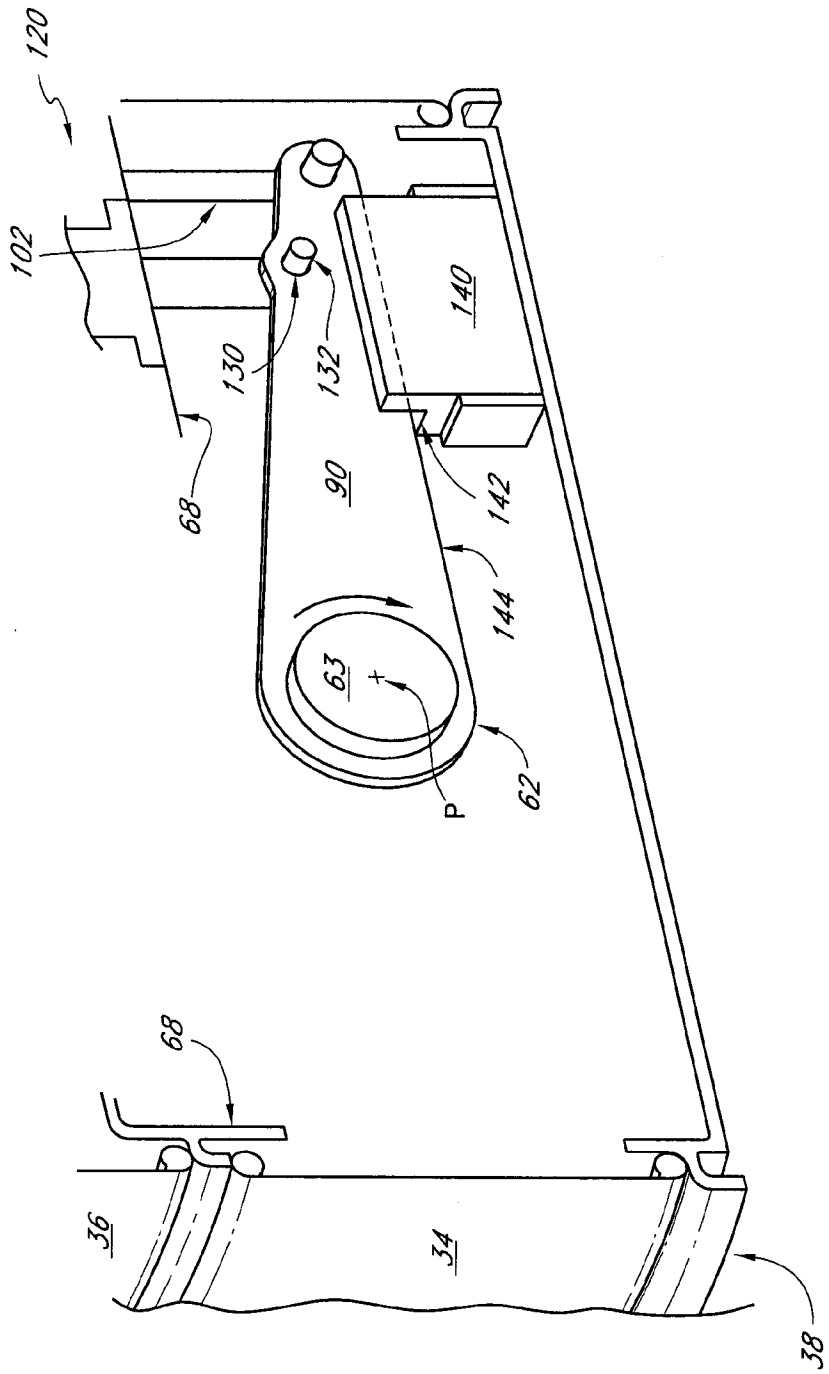


FIG. 3

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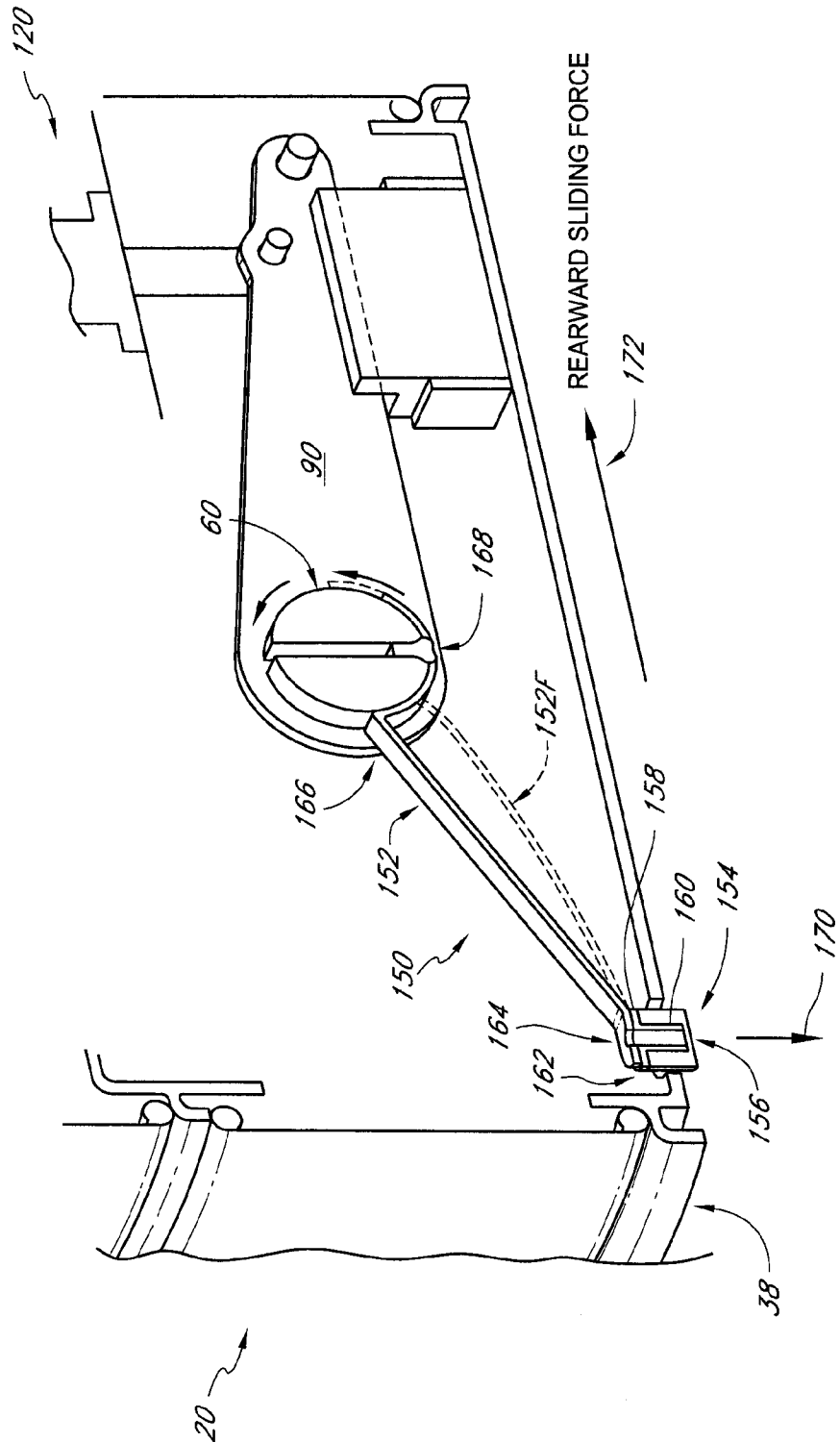


FIG. 4

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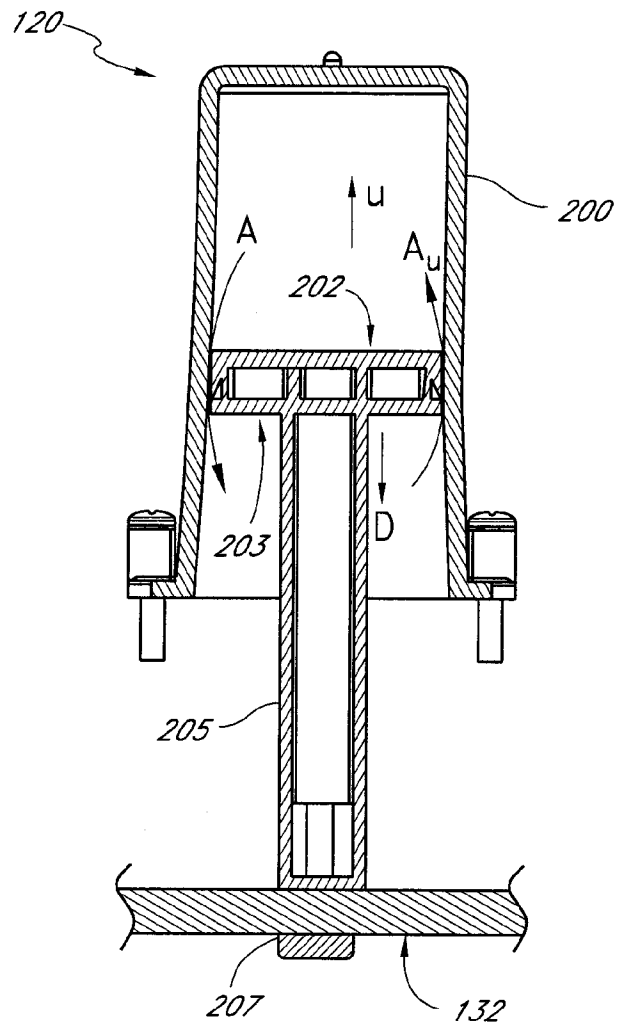


FIG. 5

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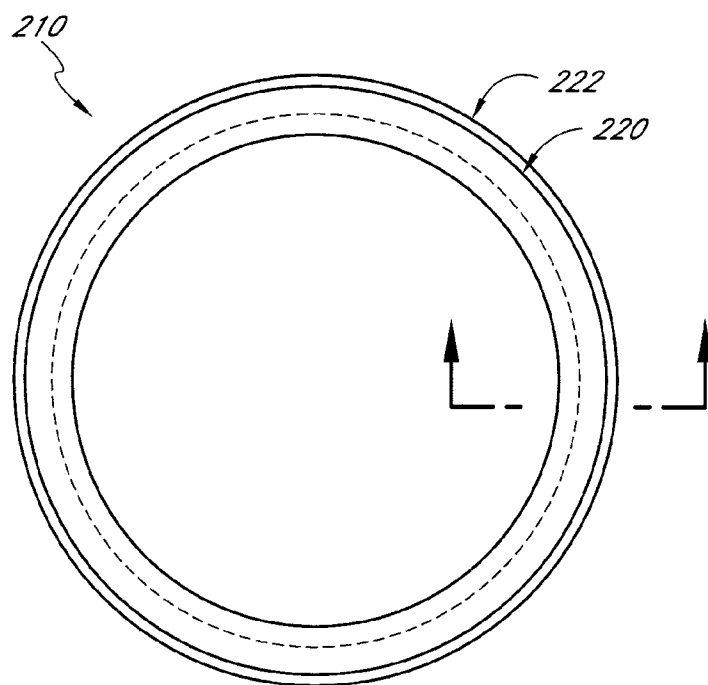


FIG. 6

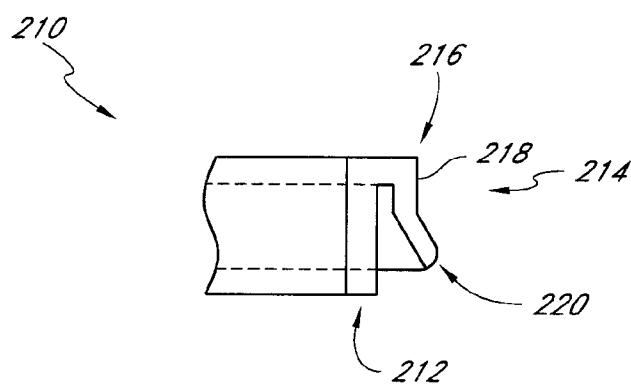


FIG. 7

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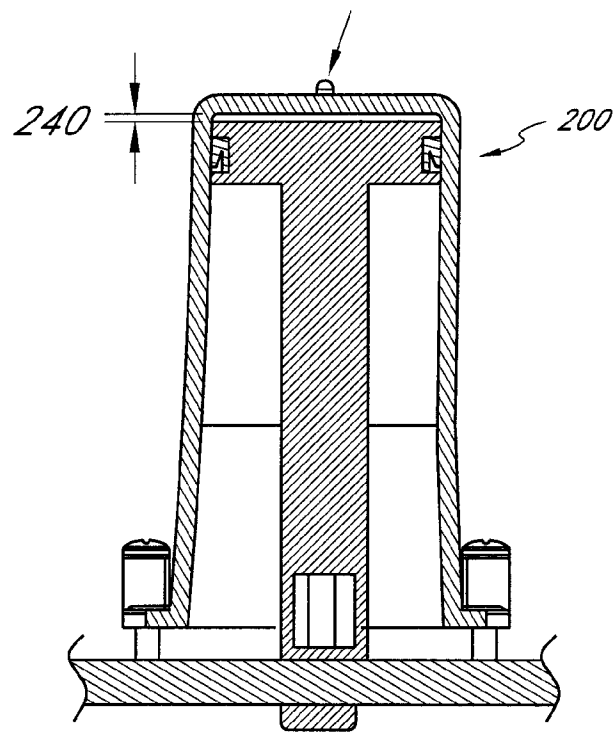


FIG. 8

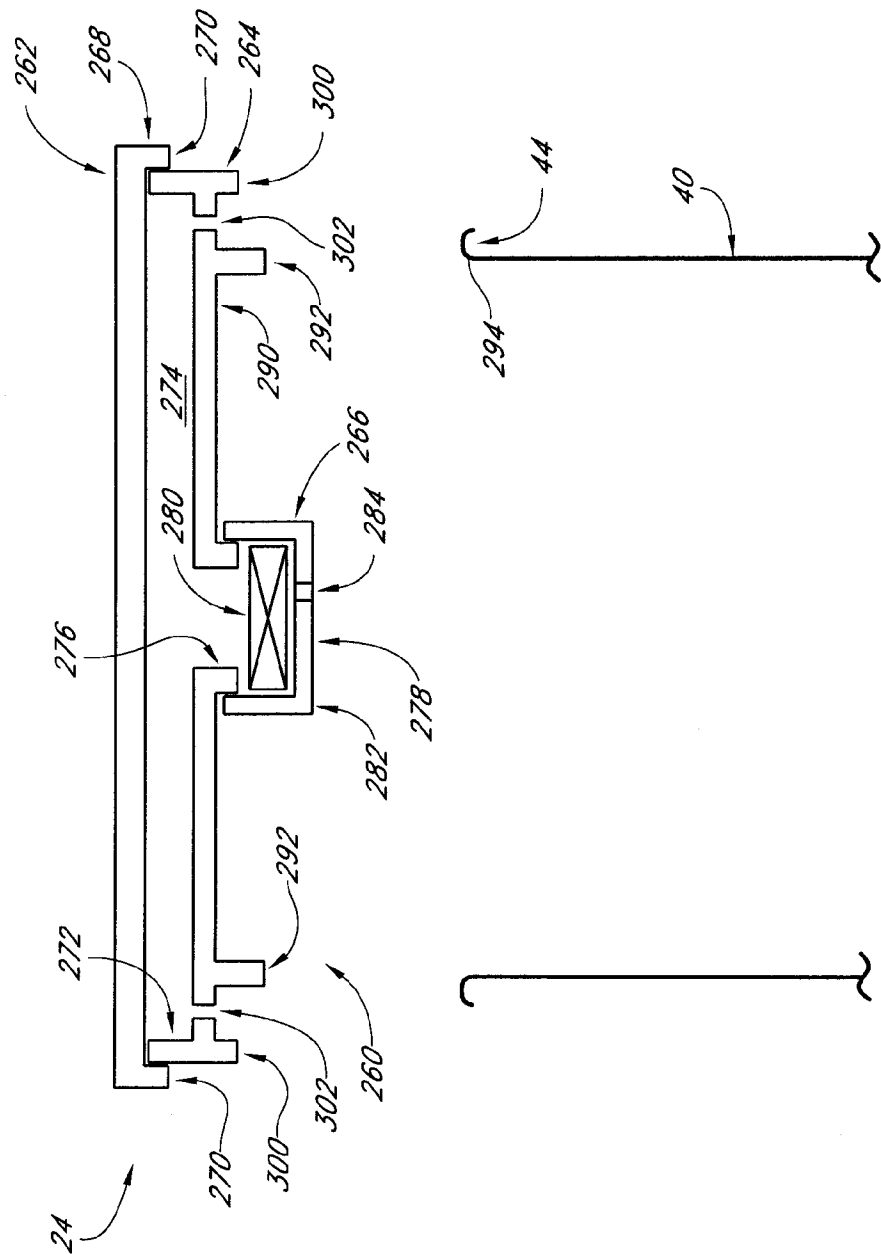


FIG. 9

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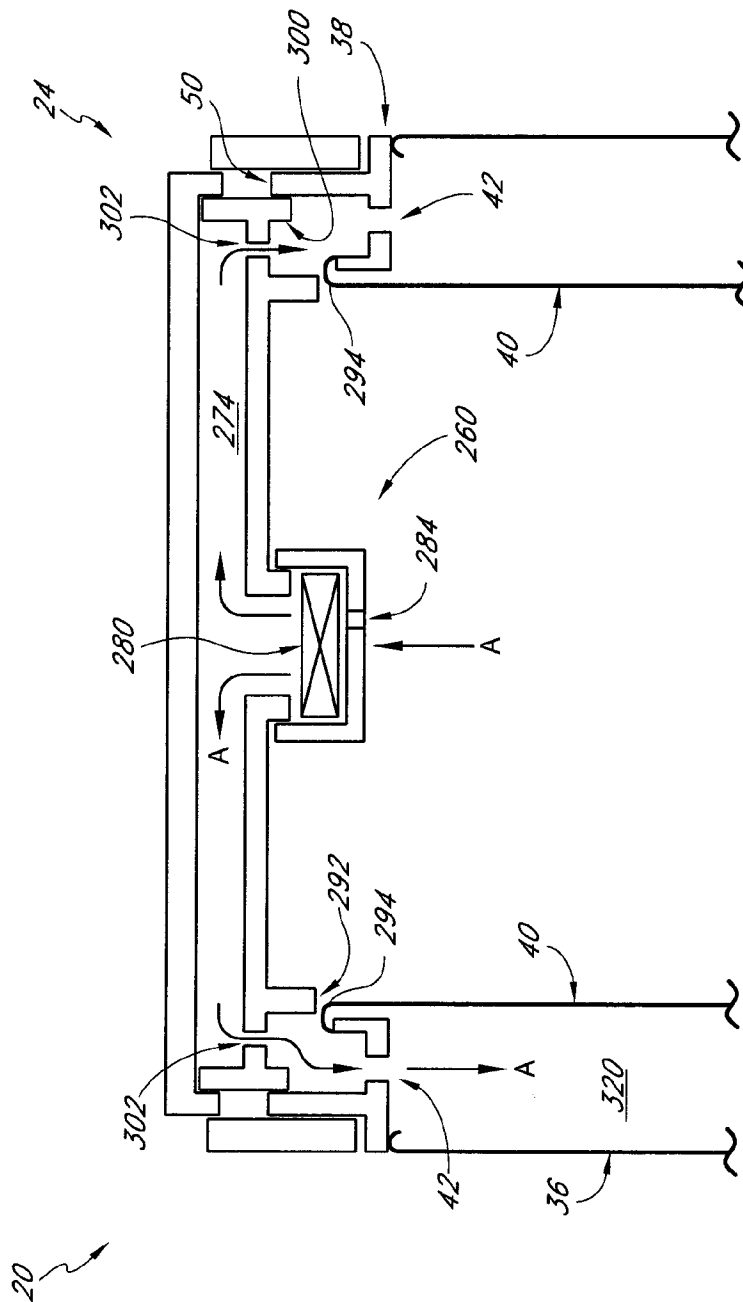


FIG. 10

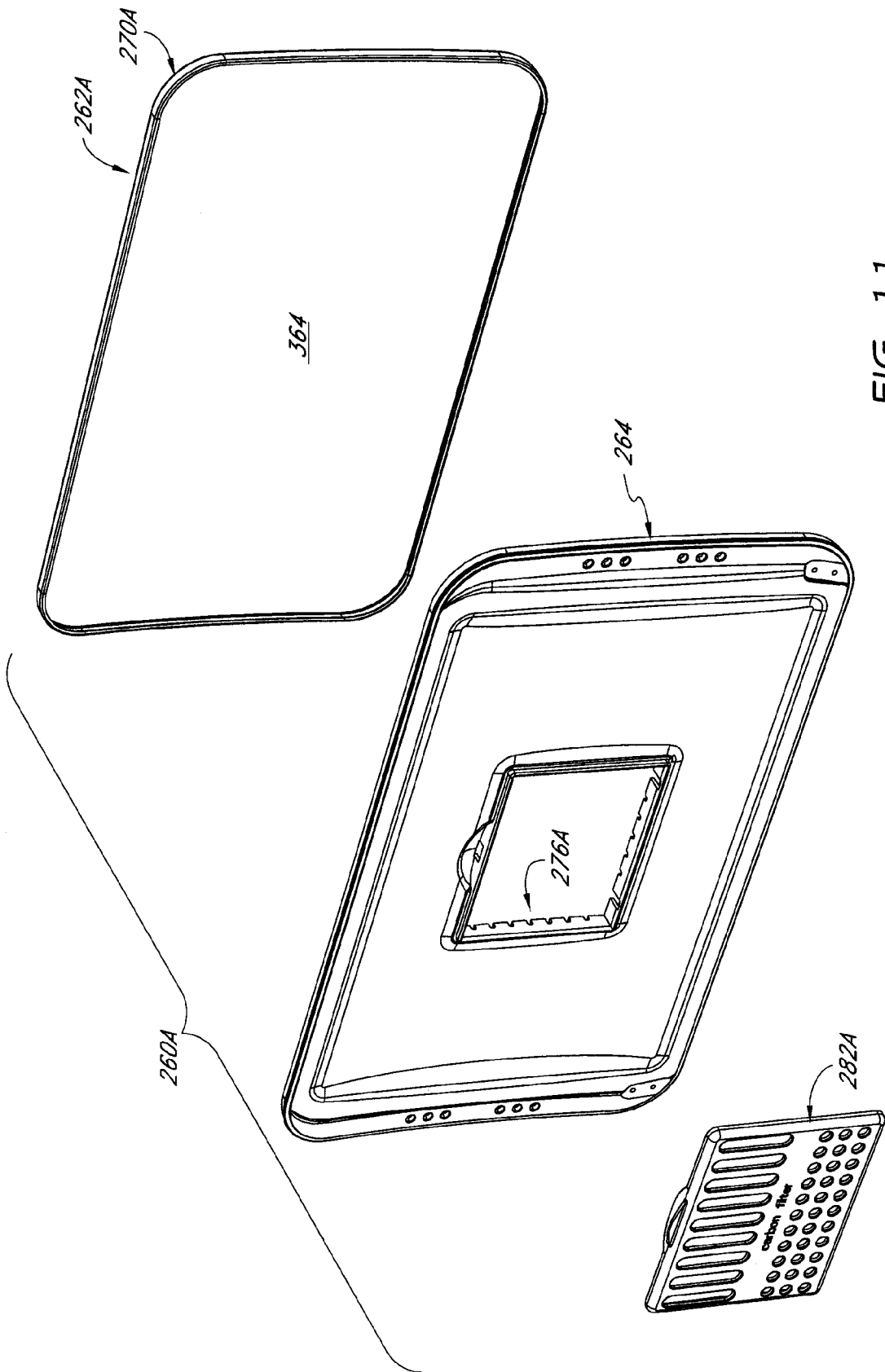


FIG. 11

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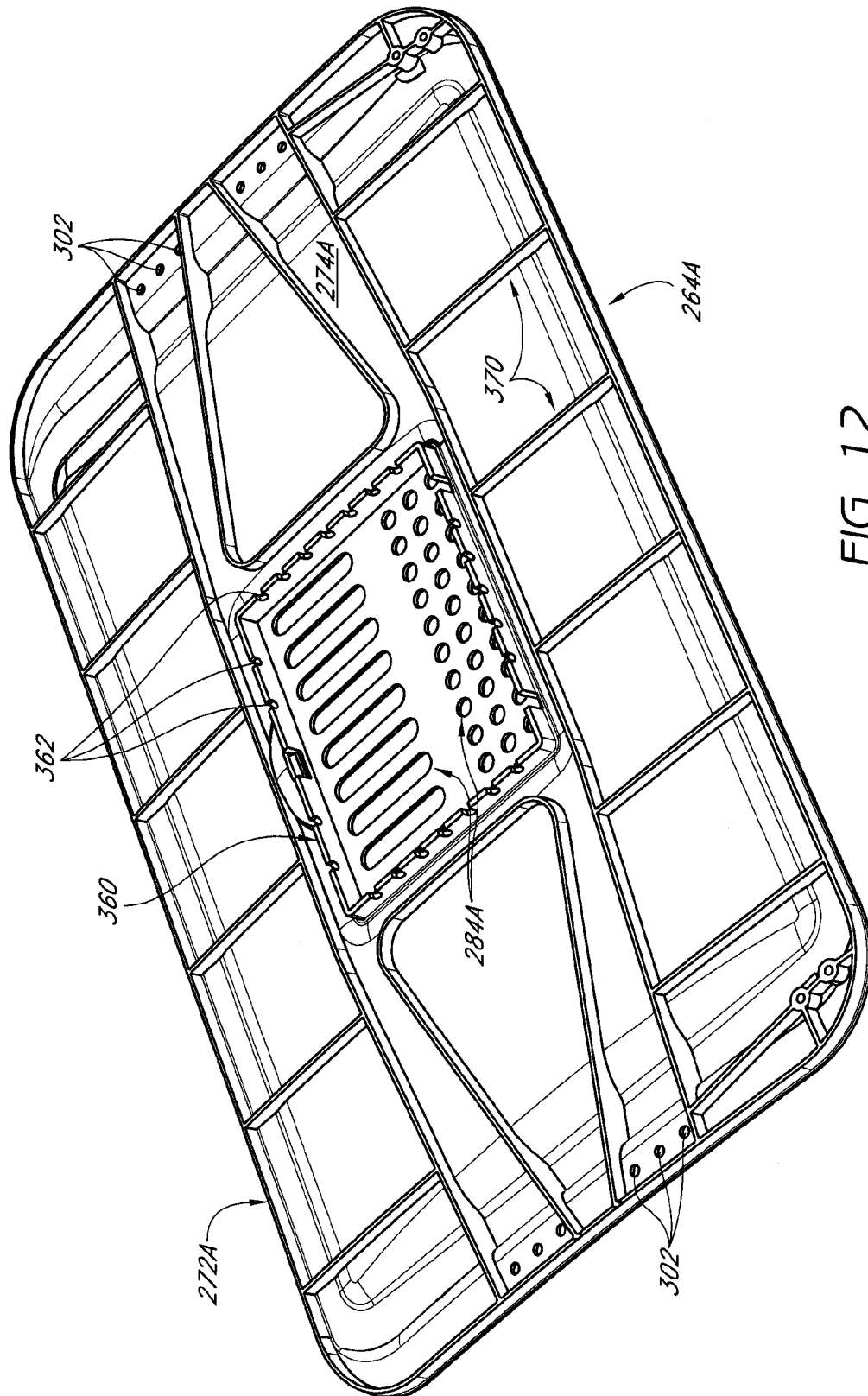


FIG. 12

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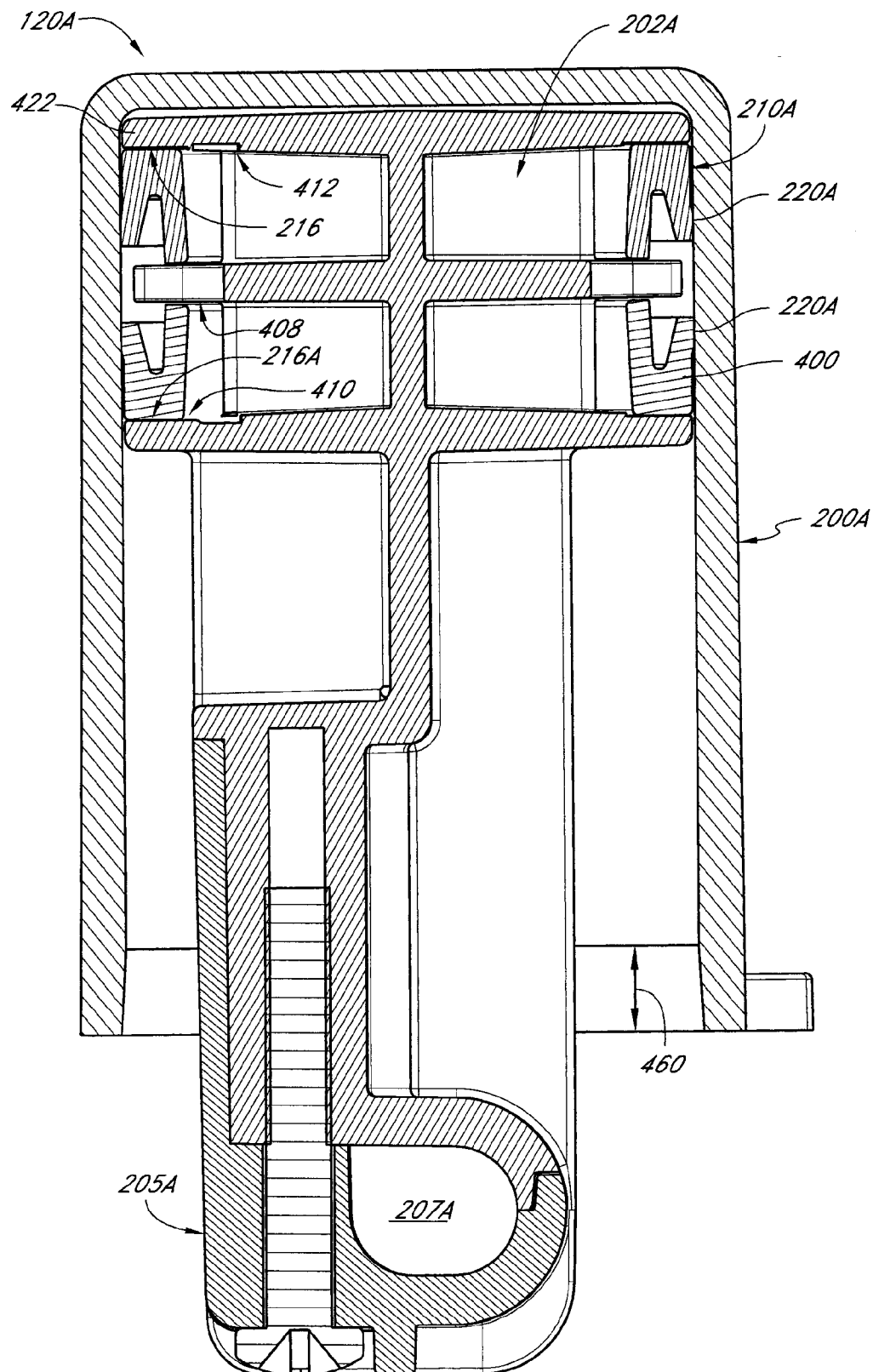


FIG. 13

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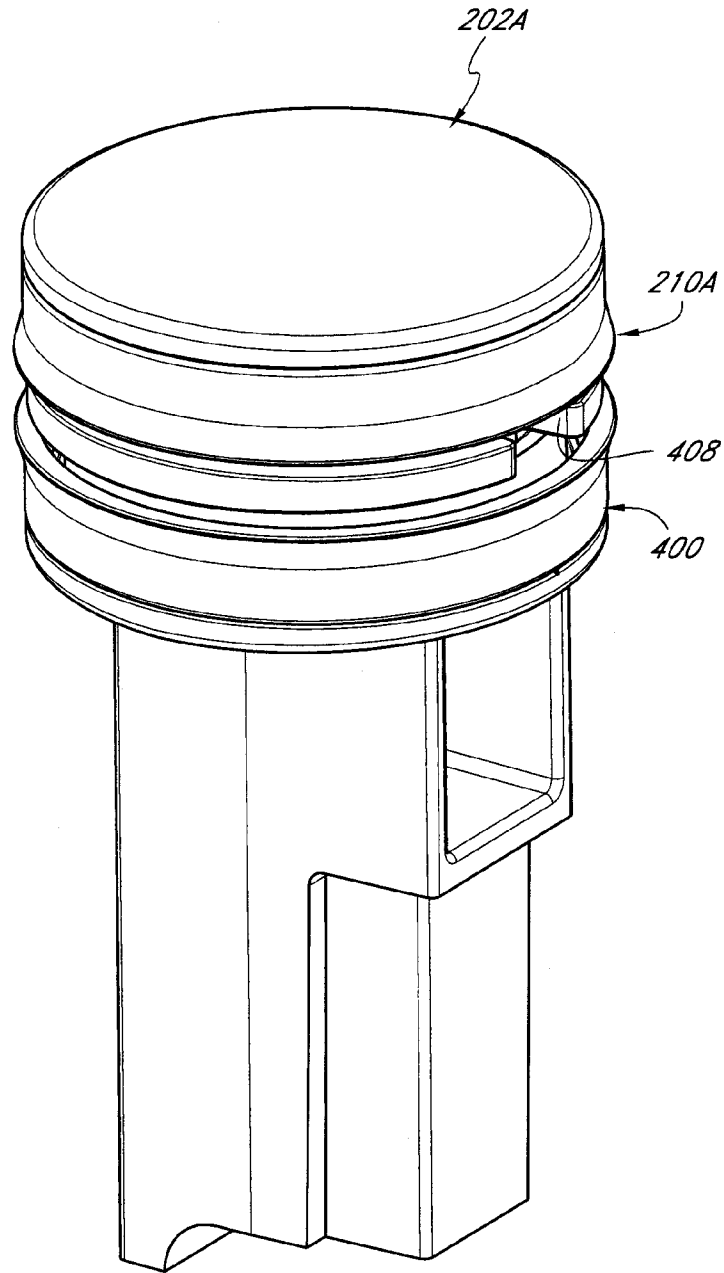


FIG. 14

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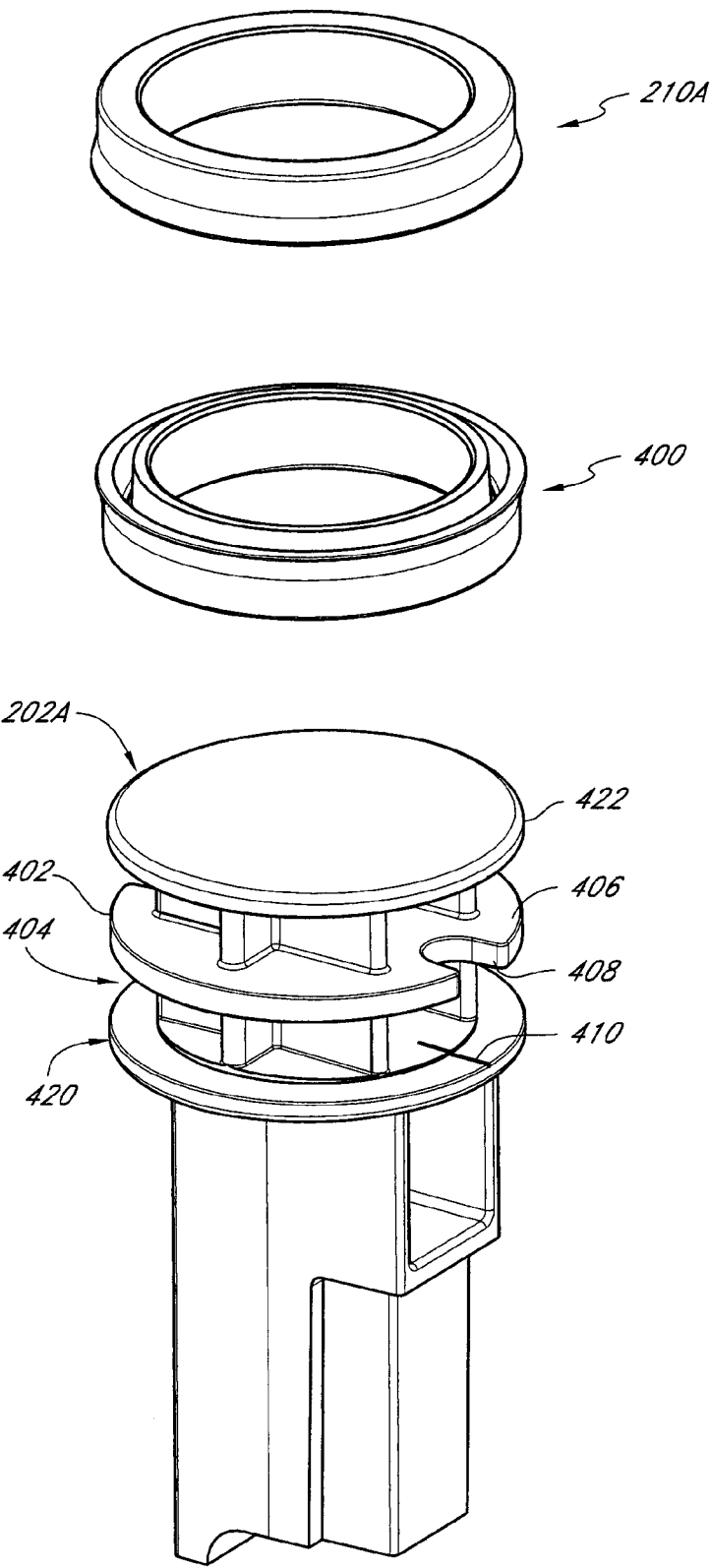
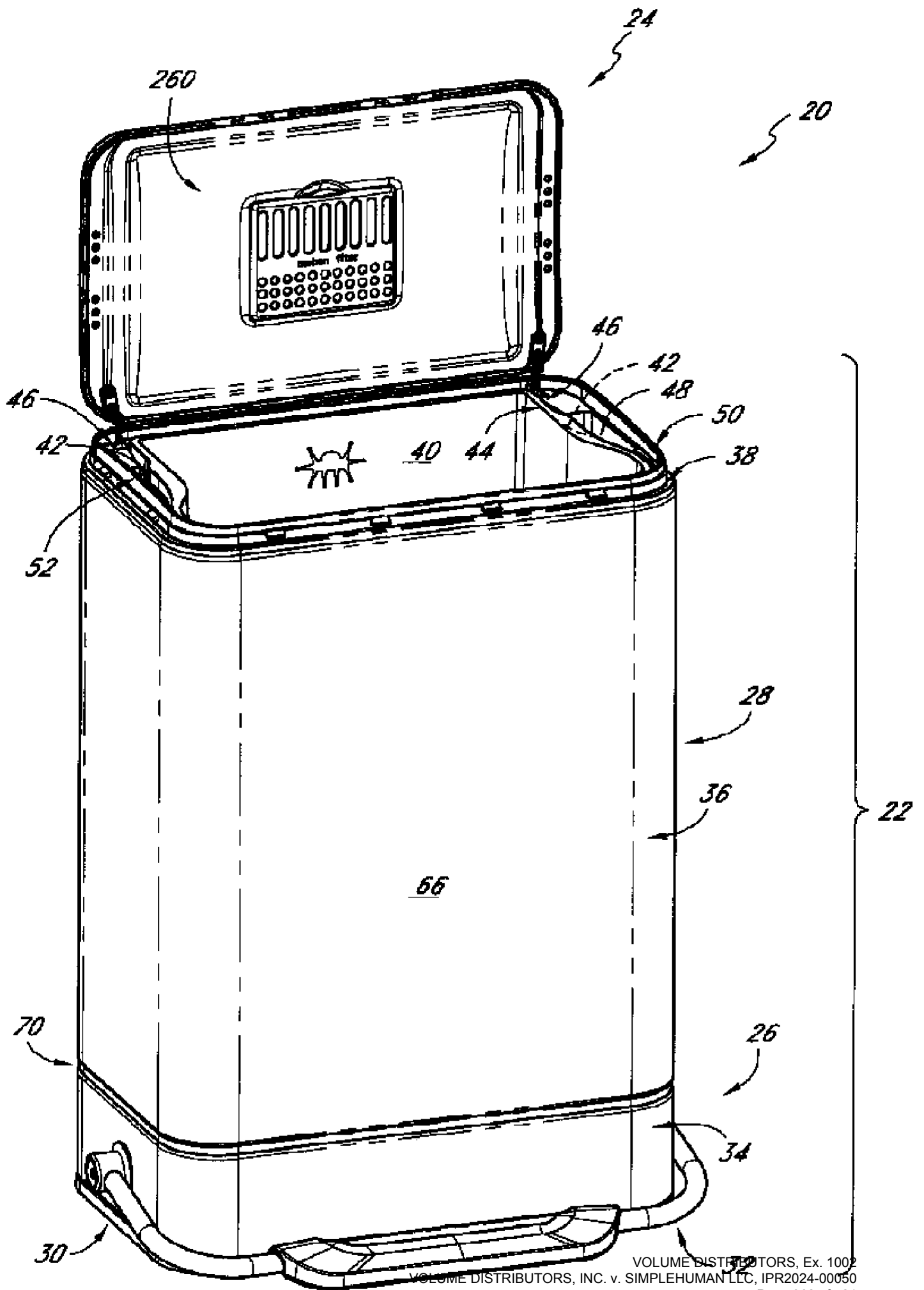


FIG. 15





Espacenet

Bibliographic data: CN101177946 (A) — 2008-05-14

Pavement hole closing device for cover with supporting frame

Inventor(s): JACQUES MONNERET JEAN [FR] ± (MONNERET JEAN JACQUES)

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Classification: - international: **E02D29/14**
 - cooperative: **E02D29/14; E02D29/1463; E05D7/1011;**
E05Y2900/612; Y10T16/5353; Y10T16/5355;
Y10T403/602

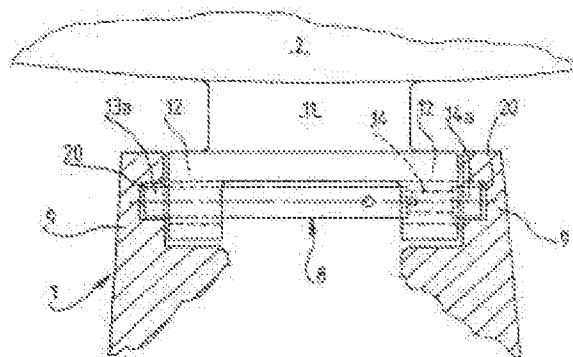
Application number: CN20071166233 20071106

Priority number (s): FR20060054742 20061106

Also published as: CN101177946 (B) AT483071 (T) BRPI0716694 (A2)
CA2671260 (A1) CA2671260 (C) more

Abstract of CN101177946 (A)

The invention relates to a road hole closing device arranged on the frame through a non-removable hinging tool for the cover. The device is characterized in that a pivotal axis comprises a main axis which consists of two parts (13, 14); wherein, at least one part is arranged in the other part in a bushing manner and is separated from the axis through a spring (15); the spring (15) is arranged between the two parts (13, 14) so as to make the two ends of the main axis (8) be inserted into and kept in the two blocking holes (20) of a frame (1) respectively. The invention is used in road field.



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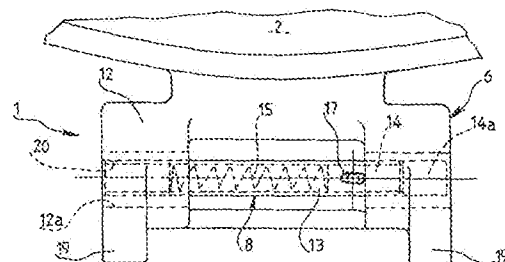
权利要求书 3 页 说明书 7 页 附图 4 页

[54] 发明名称

用于盖的带支撑边框的道路孔闭合装置

[57] 摘要

本发明涉及一种在边框上通过不可拆卸铰接工具安装的用于盖的带支撑边框的道路孔闭合装置。该装置的特征在于，枢转轴包括主轴，主轴由两个部分(13, 14)构成，其中至少一个部分在另一个部分内套管式安装并通过弹簧(15)相互同轴地分离，弹簧(15)设置于两个套管式的部分(13, 14)之间以便将主轴(8)的两个末端各自插入并保持在边框(1)的两个堵塞孔(20)内。本发明应用于道路领域中。



1. 一种用于道路孔的闭合装置，包括边框（1）以及至少一个适于被所述边框（1）支撑的盖（2）和相对于所述边框（1）的所述盖（2）的不可拆卸的铰接工具，所述铰接工具包括：榫头（6），所述榫头向所述盖（2）的周边凸出并用于插入到设置于所述边框（1）的挡板（4）内的壳体（7）内；枢转轴，所述枢转轴在所述盖（2）的所述榫头（6）内沿横向延伸；以及所述边框（1）的所述壳体（7），其特征在于，所述枢转轴包括主轴（8），所述主轴由至少一个在另一个内套管式安装的并通过弹簧（15）相互同轴分离的两个部分（13，14）构成，所述弹簧（15）设置于所述两个套管式的部分（13，14）之间以便将所述枢转的主轴（8）的两个末端（13a，14a）各自插入并保持所述边框（1）的两个堵塞孔（20）内。
2. 根据权利要求 1 所述的装置，其特征在于，所述两个堵塞孔（20）各自形成于用于限定所述盖（2）的所述榫头（6）的所述壳体（7）的两个侧壁（9）内。
3. 根据权利要求 1 或 2 所述的装置，其特征在于，在所述边框（1）的所述壳体（7）内安装所述铰接工具之前，当装有所述主轴（8）的所述盖（2）的所述榫头（6）被插入到所述边框（1）的所述壳体（7）内时，与所述弹簧（15）复位的作用力相反，所述主轴（8）的所述两个套管式的部分（13，14）通过销钉（17）被保持在回复位置或者相互同轴地凹入，所述销钉（17）穿过所述两个套管式的部分（13，14）并可被取出，使得所述两个套管式的部分（13，14）在所述弹簧（15）的作用下能够

轴向地相互分离，以便将它们的所述末端（13a，14a）插入到所述边框（1）的所述两个堵塞孔（20）内。

4. 根据权利要求3所述的装置，其特征在于，主轴的一个部分回复到另一个部分内的两个部分（13，14）的长度基本上与所述盖（2）的所述榫头（6）的长度相同。
5. 根据权利要求3或4所述的装置，其特征在于，所述盖（2）的所述榫头（6）包括至少一个挖空部分（18），所述挖空部分沿其宽度能插入所述主轴（8），在所述榫头（6）内沿着其横向方向，所述主轴的所述套管式的部分（13，14）中一个部分回复到另一个部分内。
6. 根据权利要求5所述的装置，其特征在于，所述主轴（8）的所述套管式的两个部分（13，14）的固定的所述销钉（17）向所述榫头（6）的所述挖空部分（18）凸出。
7. 根据前述权利要求任一项所述的装置，其特征在于，所述弹簧（15）为容纳在所述套管式的两个部分（13，14）的所述外部管状部分（13）内的螺旋压缩弹簧，并且所述弹簧的末端匝按压在管状部分（13）的底面（16）上并且相对的末端匝按压在所述内部套管式部分（14）的末端上。
8. 一种主轴，用于形成用于道路孔的在盖（2）与所述盖（2）的支撑边框（1）之间的不可拆卸铰接，其特征在于，所述主轴包括两个部分（13，14），其中一个部分套管式安装在另一个部分内，并且与螺旋压缩弹簧（15）复位的作用力相反，一个部分在另一个部分内处于回复位置，所述弹簧（15）设置于所述两个套管式的部分（13，14）之间，穿过所述两个套管式的

部分(13, 14)的销钉(17)将所述两个套管式的部分(13, 14)保持在此位置。

9. 一种用于将根据前述权利要求任一项所限定的装置的诸如衬垫或网栅的盖(2)通过铰接并且不可拆卸地安装在支撑边框(1)上的安装方法, 其特征在于, 所述方法包括: 容纳所述主轴(8), 所述主轴的所述两个套管式的部分(13, 14)位于所述榫头(6)内并穿过所述榫头(6), 通过所述销钉(17)使得一个部分在另一个部分内保持在回复位置; 将所述榫头(6)及所述主轴(8)插入所述边框(1)的所述壳体(7)内; 以及取出所述销钉(17)使所述弹簧(15)与所述两个套管式部分(13, 14)相互同轴分离, 以便将它们的所述末端(13a, 14a)各自插入到所述边框(1)的所述两个堵塞孔(20)内。

用于盖的带支撑边框的道路孔闭合装置

技术领域

本发明涉及一种开口闭合装置，该开口闭合装置包括边框以及至少一个铰接的盖（panneau），类型为构成道路（voirie）设备的边框和盖，该道路设备使例如埋在地下的孔（regard）可触。

背景技术

公知这样的装置，根据该装置，相对于边框的盖的不可拆卸的铰接工具包括：榫头（tenon），向盖周边凸出并适于插入设置于边框的挡板（jupe）内的壳体内；枢转轴，在盖的榫头内沿横向延伸；边框壳体，用于使盖在边框的闭合低位和可触及边框开口的高位之间枢转。

在观察孔（regard de visit）的上部末端，通过混凝土浸没边框的底板（semelle）而将边框在地下砌牢。

枢转轴或将盖与边框铰接的轴通常由螺栓构成，该螺栓穿过边框壳体的两个侧壁和设置于该壳体内的盖的榫头，螺栓固定的头部和螺母通过各自按压边框壳体的两个侧壁的外部面而被旋紧。

当安装边框的盖的时候，这样的铰接工具会引起问题。

实际上,为了使铰接螺栓能插入穿过边框壳体的侧壁并穿过设置于该壳体内部的盖的榫头,必须预先打碎壳体侧壁边框的底板周围的砌牢混凝土部分,然后,一旦铰接螺栓安装好,再次将设置在边框开口周围的部分用混凝土填满。

发明内容

本发明的一个目的是解决上述公知的闭合装置的问题。

为此,根据本发明,用于道路孔 (regard de chaussée) 的闭合装置包括: 边框, 至少一个适于被边框支撑的盖、以及相对于边框的盖的不可拆卸的铰接工具, 这些铰接工具包括: 向盖周边凸出并用于插入到设置于边框的挡板内的壳体内部的榫头、在盖的榫头内沿横向延伸的枢转轴、以及边框壳体, 其特征在于, 枢转轴包括主轴, 该主轴由至少一个在另一个内套管式安装的并通过弹簧相互同轴分离的两个部分构成, 该弹簧设置于两个套管式的部分之间以便将枢转的主轴的两个末端各自插入并保持在边框的两个堵塞孔内。

有利地, 两个堵塞孔各自形成于壳体的用于限定盖的榫头的两个侧壁内。

在边框的壳体内安装铰接工具之前, 当装有主轴的盖的榫头被插入到边框的壳体内时, 与弹簧复位的作用力相反, 主轴的两个套管式的部分通过销钉被保持在回复 (rentrée) 位置或者相互同轴地凹入, 该销钉穿过两个套管式的部分并可被取出, 使得两个套管式的部分在弹簧的作用下能够轴向地相互分离, 以便将它们的末端插入到边框的两个堵塞孔内。

主轴的一个部分回复到另一个部分内的两个部分的长度基本上与盖的榫头的长度相同。

盖的榫头包括至少一个挖空部分，该挖空部分沿其宽度能插入主轴，在榫头内沿着其横向方向，主轴的套管式部分中的一个部分回复到另一个部分内。

主轴的套管式的两个部分的固定销钉向榫头的挖空部分凸出。

弹簧有利地为容纳在套管式的两个部分的外部管状部分内的螺旋压缩弹簧，并且该弹簧的末端匝按压在管状部分的底面上并且相对的末端匝按压在内部套管式部分的末端上。

本发明还涉及一种主轴，该主轴用于通过道路孔在盖和盖的支撑边框之间形成不可卸铰接，其特征在于，该主轴包括两个部分，其中一个部分安装在另一个部分内，并且与螺旋压缩弹簧复位的作用力相反一个部分在另一个部分内处于回复位置，该弹簧设置于两个套管式部分之间，穿过两个套管式部分的销钉将这两个套管式部分保持在此位置。

本发明最后还涉及将盖（诸如衬垫（tampon）或者网栅）铰接并且不可拆卸地安装在支撑边框（如上所述）上的安装过程，并且其特征在于，容纳主轴，该主轴的两个套管式部分位于榫头内并穿过该榫头，通过销钉使得一个部分在另一个部分内保持在回复位置；将榫头及主轴插入边框的壳体内；以及取出销钉使弹簧与两个套管式部分相互同轴分离，以便将它们的末端各自插入到边框的两个堵塞孔内。

附图说明

参照附图可以更好地理解本发明，并且本发明其它的目的、特征、细节和优点会更加清楚地呈现在参照附图作出的解释性描述中，这些附图是本发明实施例的示例性附图，附图中：

图 1 是根据本发明的带有盖的支撑边框的道路设备的俯视图，该设备通过铰接工具铰接安装在边框上，该设备处于闭合位置；

图 2 是根据本发明的带有铰接榫头的盖的放大仰视透视图；

图 3 是图 2 中的榫头沿箭头 III 方向的正视图；

图 4 是铰接主轴（broche）的侧视图，该主轴位于准备将盖的榫头安装到与边框相对应的壳体内部的位置；

图 5 是图 4 中的主轴沿箭头 V 方向的侧视图；

图 6 是带有铰接主轴的部分被截取（arrachement）的视图，其主轴在与边框相对应的壳体内占有盖的榫头的固定的激活位置（position active de retenir）；

图 7 示出了榫头和主轴组件，该组件安装在与边框相对应的壳体内并且主轴位于其非激活（inactive）位置内；以及

图 8 是与图 7 类似的视图，该视图示出了在取出销钉之后约束（captive）于边框内的主轴。

具体实施方式

图中示出的装置包括：边框 1，可在观察孔或观察烟道（regard ou cheminée de visit）的上部末端内的地下被砌牢；盖 2（诸如衬垫或网栅），此盖通过形成铰链 3 的铰接工具不可拆卸地与边框 1 相连接，铰链 3 使盖 2 从边框 1 的开口闭合的位置（在该位置，盖位于边框 1 的挡板 4 内的厚度上）翻转到可触及由挡板 4 限定的边框 1 的开口的高位置。

边框 1 和盖 2 以具有普通圆形形状示出，但是它们可以具有普通矩形形状。

边框 1 在其外部周边装有底板 5，该底板能通过混凝土将边框 1 固定于地下。

铰接工具 3 包括：榫头 6，向盖 2 的外周边凸出并适于插入设置在边框 1 的挡板 4 内的联合壳体 7 内；枢转轴，在榫头 6 中横向延伸；边框 1 的壳体 7，该壳体限定在向边框的挡板 4 的外周边凸出的箱体内，并且该壳体包括两个侧壁 9 以及与侧壁 9 横向连接的壁 10，枢转轴横向设置在这两个侧壁之间。

盖 2 的榫头 6 和壳体 7 分别具有两个相互配合的接近于 T 形的形状，但是，当然该形状不是限制性的。

因此，榫头 6 包括：沿盖 2 径向延伸并与 T 形的腿部相对应的部分 11、以及与 T 形的横向部相对应的普通圆柱形形状的部分 12。横向部分 12 具有的长度稍短于壳体 7 的两个侧壁 9 的两个相对的内面之间的距离。

根据本发明，铰接轴由圆柱形主轴构成，该主轴包括两个相互分别套管式插入的管状外部部分 13 和内部部分 14，通过将压缩弹簧的其中一个末端匝按压在管状部分 13 的底壁 16 上以及将相对的末端匝按压在容纳于主轴 8 的部分 13 内的滑动部分 14 的末端上，该内部部分 14 能在部分 13 内同轴地滑动，以便在容纳于部分 13 内的螺旋状压缩弹簧 15 的作用下轴向地分离部分 13。

主轴 8 的滑动部分 14 通过与弹簧 15 相接触并借助于具有基本上与管状部分 13 的外部直径相同的更大直径部分 14a，终止于其相对的末端。

在主轴 8 的非激活位置，通过将弹簧 15 压缩，滑动部分 14 凹入到管状部分 13 内并通过穿过主轴 8 的两个部分 13、14 的销钉 17 而保持在该位置。部分 14 在部分 13 内的凹入位置，部分 14 的更大直径部分 14a 按压在与管状部分 13 相对的末端上。

如图 2 更明显所示，榫头 6 的圆柱部分 12 被部分地挖空，如同沿其纵向（即榫头 6 宽度的横向）方向的标号 18 所示，为了形成窗口并在该窗口内可以插入主轴 8，该主轴的两部分 13、14 通过销钉 17 保持相互凹入。在部分 13、14 的相互凹入位置，主轴 8 的长度与榫头 6 的圆柱部分 12 的长度基本上相同，该榫头的贯穿孔 12a 的直径稍大于主轴 8 的管状部分 13 的外直径。

将盖 2 与边框 1 相连接的铰接铰链的安装如下进行。

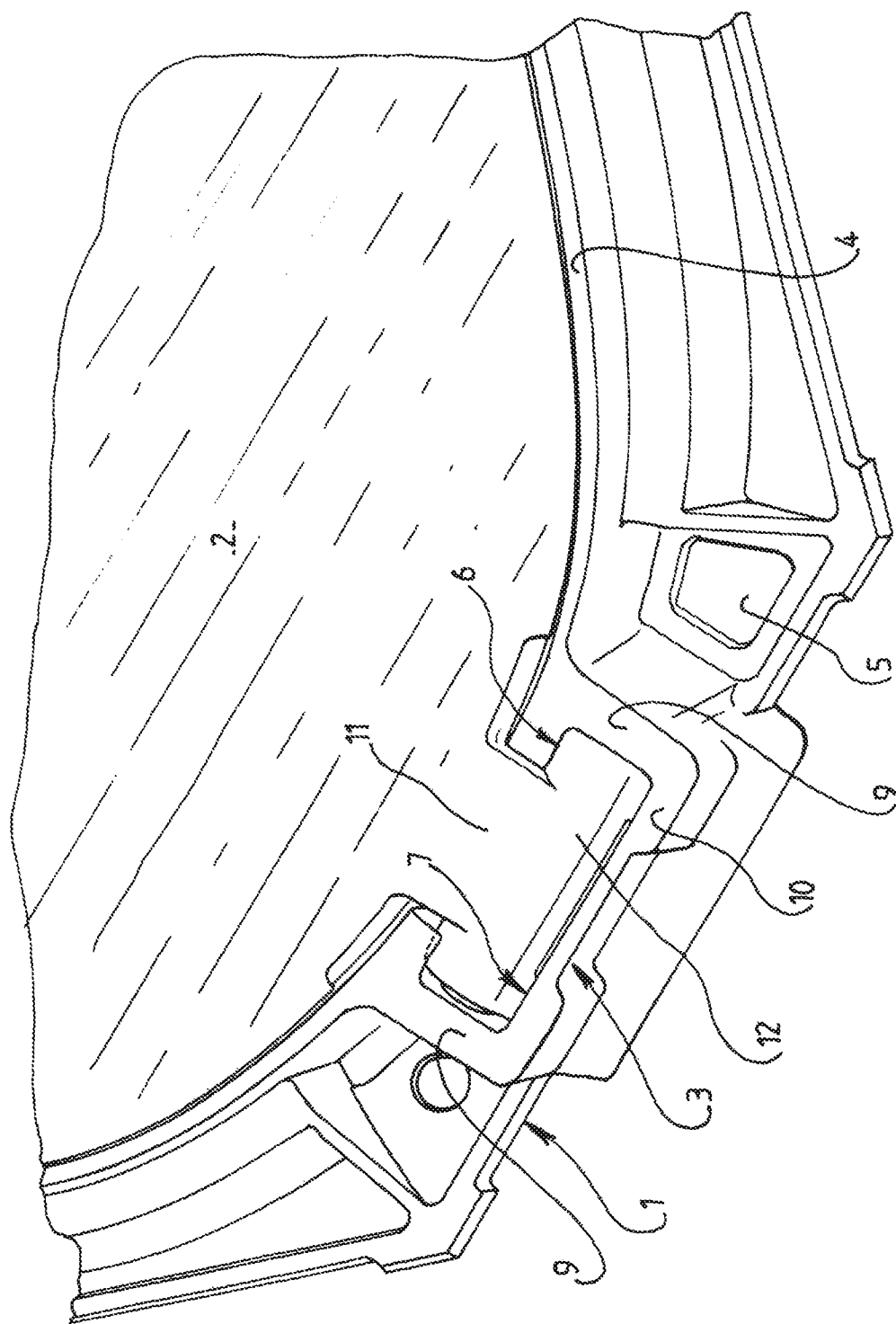
首先，主轴 8 的两个部分 13、14 通过销钉 17 相互保持凹入，将该主轴插入到榫头 6 的圆柱部分 12 的贯穿孔 12a 内，穿过挖空部分 18，使得主轴 8 的自由末端不向榫头 6 的一端及另一端凸出。

接下来，盖 2 以相对高于边框 1 的位置被示出并且榫头 6 被插入边框 1 的壳体 7 中。盖 2 相对高于边框 1 的位置的保持可以通过两个轴向设置的麦角（ergot）19 来确保，这两个麦角从榫头 6 的圆柱部分 12 径向凸出并在与边框 1 相分离的支撑表面上是全锁状态，如其所公知的情况。

接下来，将销钉 17 从主轴 8 取出并且弹簧 15 在部分 14 施加作用力，该作用力使之在与部分 13 分离的方向上滑动，以便主轴 8 的部分 13 和部分 14 的两个自由末端 13a 和 14a 能够各自插入两个同轴的堵塞孔 20 内，这些孔 20 形成在壳体 7 的侧壁 9 内。这样，由于榫头 6 以非常微小的间隙容纳于壳体 7 内，所以主轴 8 从外部不可见并在壳体 7 内保持约束。

因此，将盖 2 与边框 1 相连接的本发明的铰接工具的安装可不用打碎物料（诸如混凝土），而是围绕壳体 7 的侧壁 9 将边框 1 的底板 5 砌牢在地下而进行，因为主轴 8 的末端可容纳于在两个侧壁 9 内所形成的两个堵塞孔 20 内。

当然，本发明可用于包括多个盖的道路设备，每个盖通过如上所述的铰接工具而铰接地安装于边框上。虽然从结构方面来说更加复杂，但是主轴可由三部分构成：管状中央部分、以及在中央部分的两个末端部分内两个各自相对安装的滑动部分，并且弹簧插入在两个滑动部分之间，这两个滑动部分（在主轴的非激活位置）凹入中央管状部分内并由两个在外部可触及的销钉所支撑，一个销钉穿过中央管状部分和其中一个滑动部分，而另一个销钉穿过中央部分和滑动末端的另一部分。通过取出两个销钉，两个滑动末端部分相互分离，以便于将两个滑动末端部分插入由盖的榫头的壳体 7 限定的两个侧壁的两个堵塞孔内。



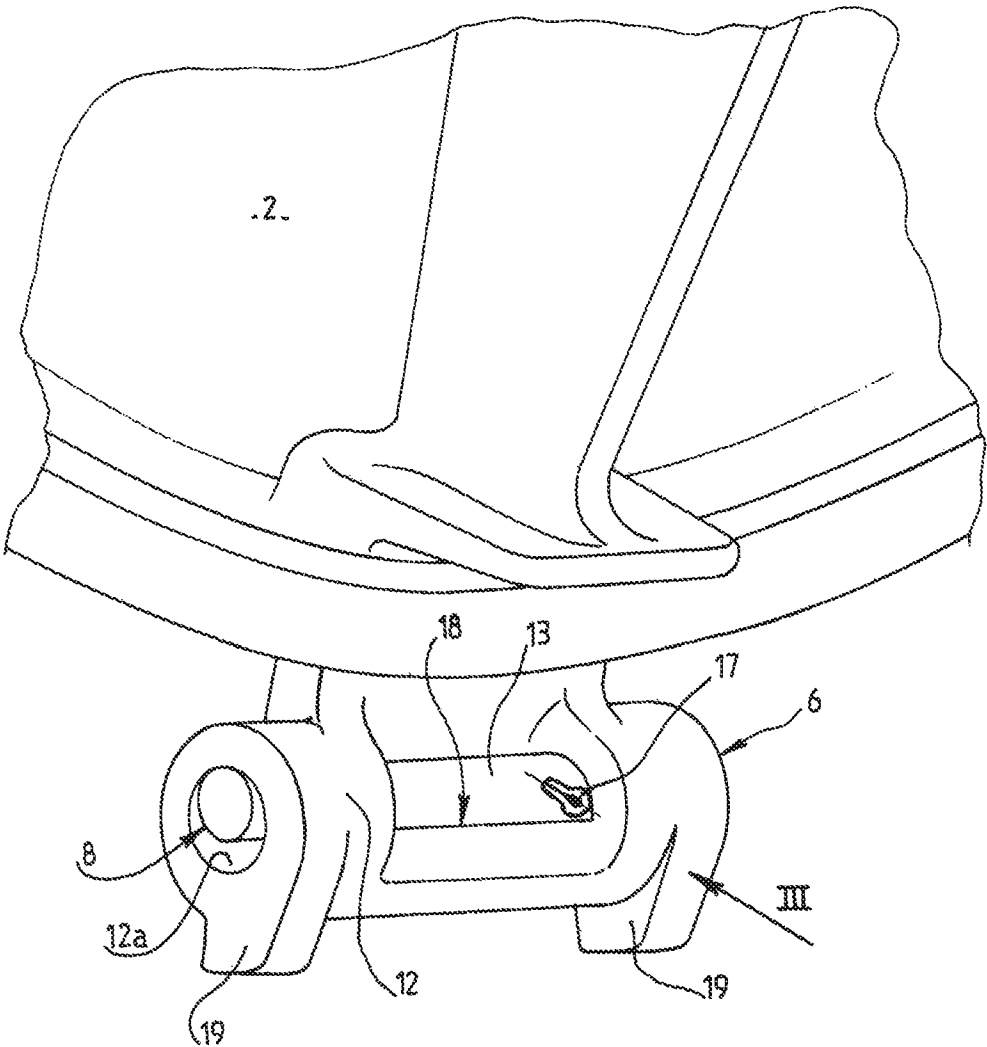


图 2

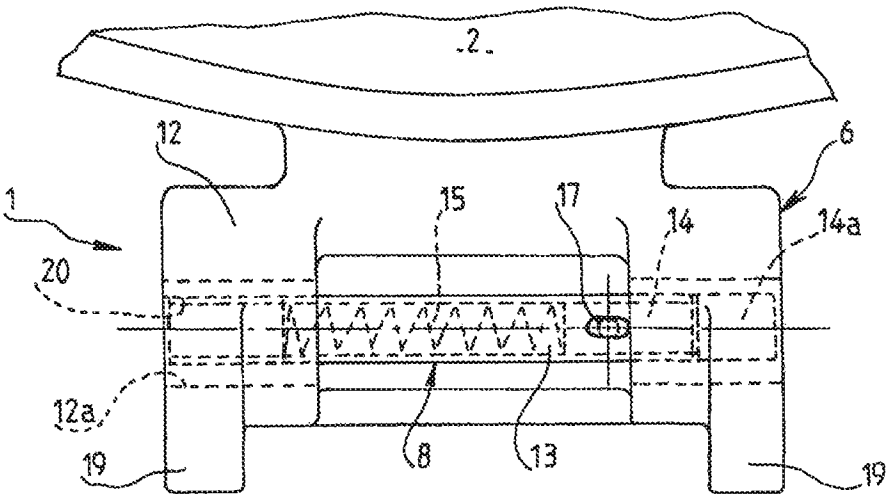


图 3

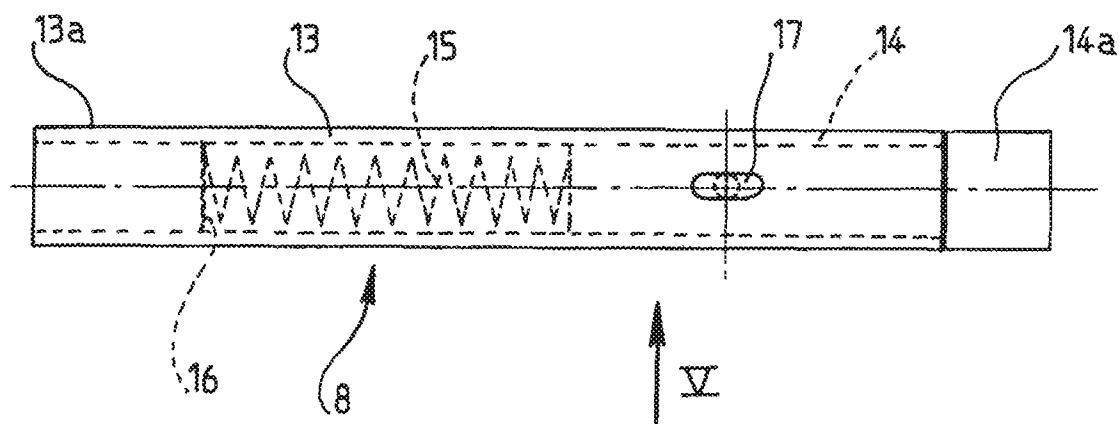


图 4

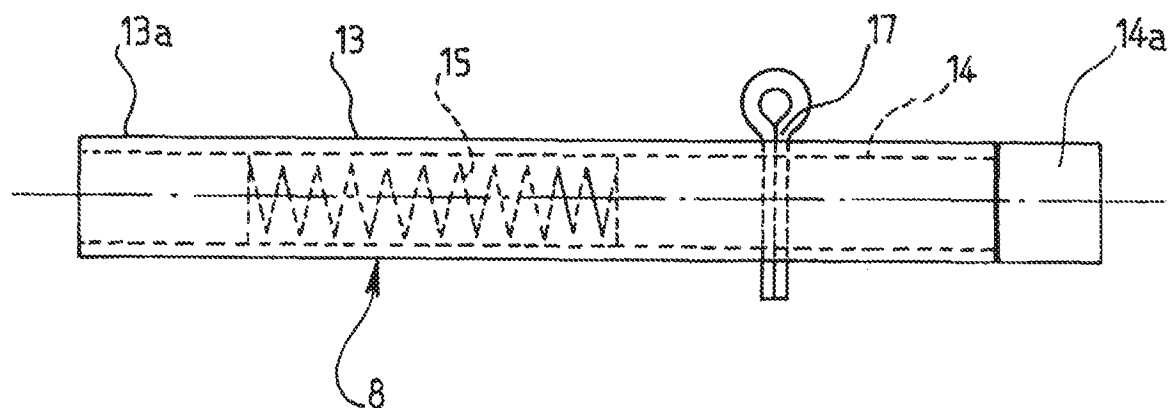


图 5

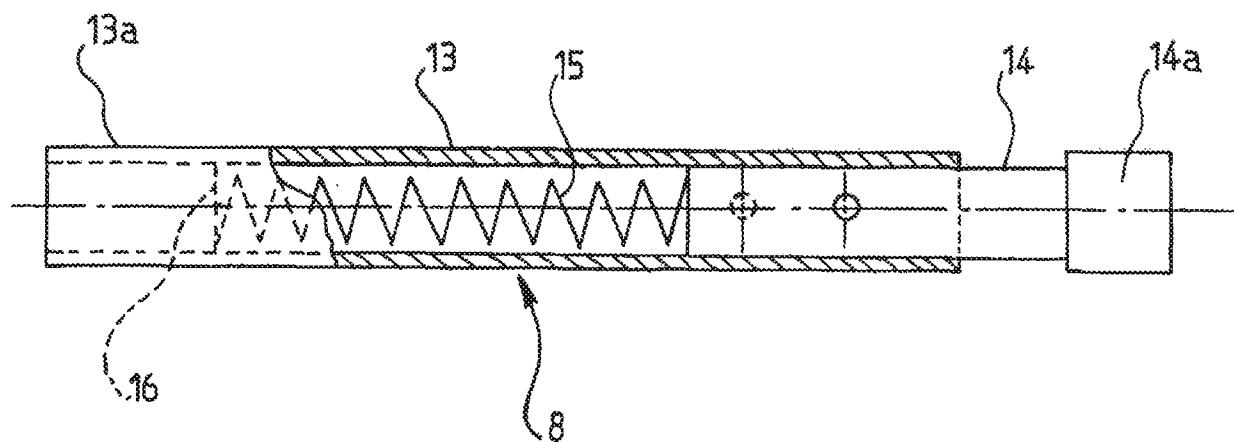


图 6

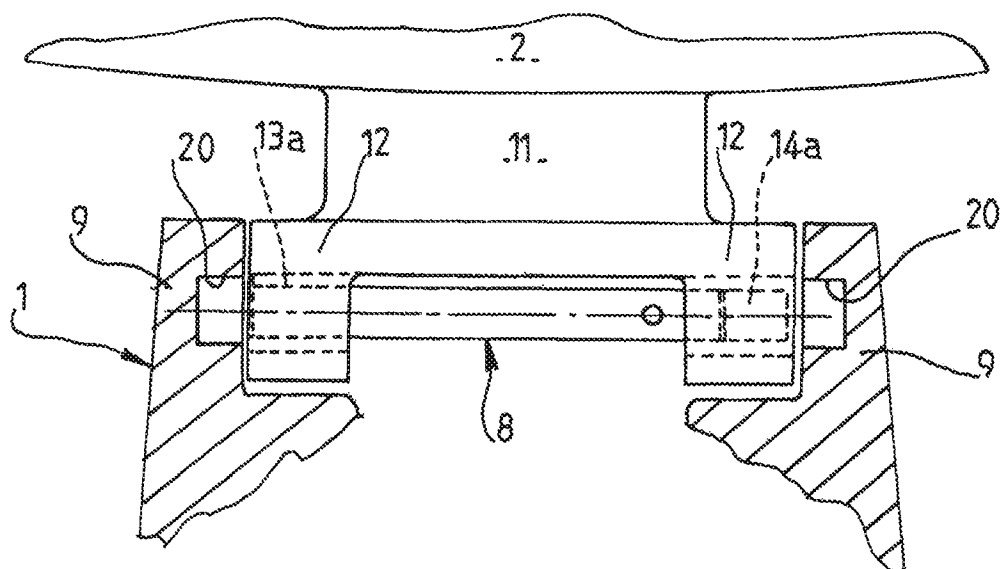


图 7

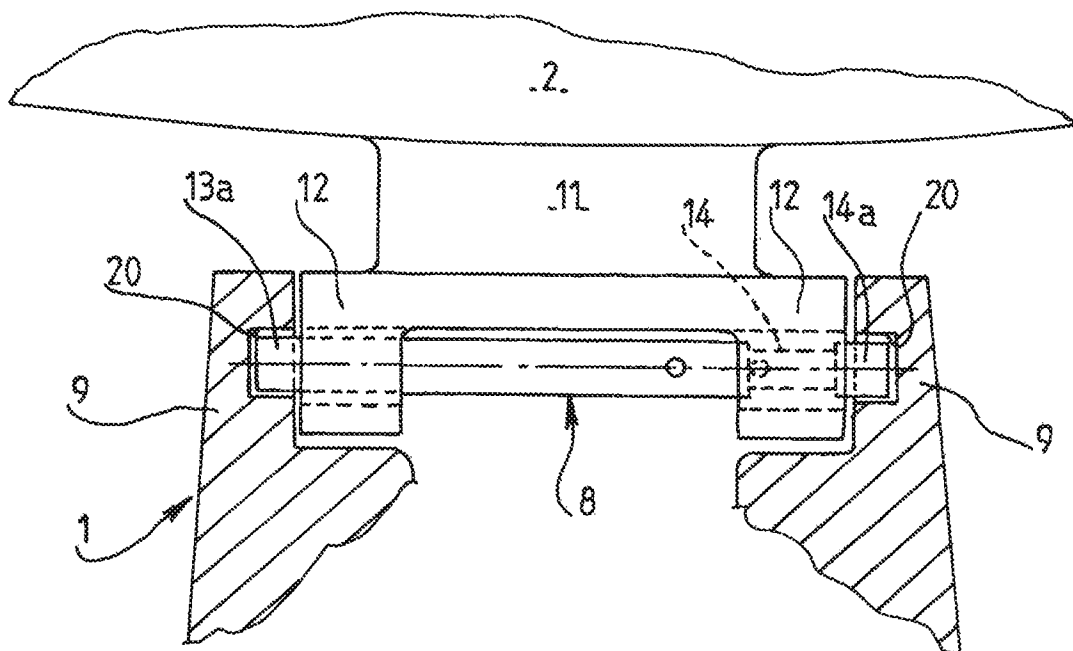


图 8



Espacenet

Bibliographic data: CN201372076 (Y) — 2009-12-30

Underground garbage bin

Inventor(s): ZHIGUO ZHANG ± (ZHANG ZHIGUO)
Applicant(s): ZHIGUO ZHANG ± (ZHANG ZHIGUO)
Classification: - **international:** B65D43/26; B65F1/04; B65F1/14; B65F1/16
- **cooperative:**
Application number: CN2009299186U 20090220
Priority number(s): CN2009299186U 20090220

Abstract of CN201372076 (Y)

The utility model relates to an underground garbage bin which comprises an outer tub and an inner tub or a built-in bag, wherein the inner tub or the built-in bag is arranged inside the outer tub; the upper end of the outer tub is connected with a big cover supporting ring which is movably connected with a big cover; the big cover is provided with a garbage throw-in port, movably connected with a small cover and internally provided with a pedaling opening mechanism for opening the small cover; when covering the big cover, the small cover seals the garbage throw-in port of the big cover; and the outer tub takes the shape of a cone frustum and the tub body adopts a ripple structure. The underground garbage bin has simple structure, low manufacturing cost, low failure rate when in use and long service life; and the outer tub adopting the ripple structure has good pressure-resisting and impact-resisting properties and an anti-floating function.

[19] 中华人民共和国国家知识产权局

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B65F 1/04 (2006.01)

B65F 1/14 (2006.01)

B65F 1/16 (2006.01)

B65D 43/26 (2006.01)



[12] 实用新型专利说明书

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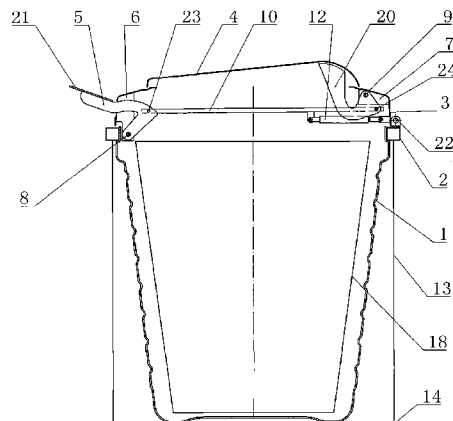
权利要求书 1 页 说明书 3 页 附图 6 页

[54] 实用新型名称

一种地埋垃圾箱

[57] 摘要

本实用新型涉及的是一种地埋垃圾箱，这种地埋垃圾箱包括外桶、内桶或内置袋，内桶或内置袋置于外桶内，外桶上端联接有大盖支撑圈，大盖支撑圈上活动联接有大盖，大盖带有垃圾投放口，大盖上活动联接有小盖，大盖内安装有开启小盖的脚踏开启机构，小盖扣置在大盖上时，封住大盖的垃圾投放口。外桶为圆台形的，桶身采用波纹结构。本实用新型结构简单，造价低；使用时故障率低，寿命长；波纹结构的外桶抗压、抗冲击性能好，具有防漂浮的功能。



- 1、 一种地埋垃圾箱，其特征在于：它包括外桶（1）、内桶（18）或内置袋，内桶（18）或内置袋置于外桶（1）内，外桶（1）上端联接有大盖支撑圈（2），大盖支撑圈（2）上活动联接有大盖（3），大盖（3）带有垃圾投放口（19），大盖（3）上活动联接有小盖（4），大盖（3）内还安装有开启小盖（4）的脚踏开启机构，小盖（4）扣置在大盖（3）上时，封住大盖（3）的垃圾投放口（19）。
- 2、 根据权利要求 1 所述的地埋垃圾箱，其特征在于：所述的外桶（1）为圆台形的，桶身采用波纹结构。
- 3、 根据权利要求 2 所述的地埋垃圾箱，其特征在于：所述的大盖支撑圈（2）和大盖（3）之间，连接有气弹簧（16）和控制大盖（3）开度的拉链（17）。
- 4、 根据权利要求 2 或 3 所述的地埋垃圾箱，其特征在于：所述的大盖支撑圈（2）上安装有拉板（13），该拉板（13）上连接有地脚板（14）。
- 5、 根据权利要求 2 所述的地埋垃圾箱，其特征在于：所述的脚踏开启机构的脚踏柄（5）与小盖支撑板（20）之间通过连杆（10）活动连接。
- 6、 根据权利要求 5 所述的地埋垃圾箱，其特征在于：所述的脚踏开启机构上还包括阻尼器（12），阻尼器（12）的一端安装连杆（10）上，另一端安装于大盖（3）上。
- 7、 根据权利要求 6 所述的地埋垃圾箱，其特征在于：所述的连杆（10）可分为两段，并且通过一个拉力大于小盖开启力的防护弹簧（11），将上述两段连杆连接在一起。

一种地埋垃圾箱

技术领域：本实用新型涉及的是垃圾箱，具体涉及的是一种地埋垃圾箱。

背景技术：

传统的地埋垃圾箱大多机构复杂，重量较大，造价较高；为了追求功能上的齐全，传统的地埋垃圾箱附加部件较多，结构复杂，部件设置不尽合理，在实际使用中发现，这些附加部件、活动部件是最容易损坏的，它们是造成传统的地埋垃圾箱故障率高、使用寿命短的最主要原因；另外，外桶由于结构不合理，在运输时稍有不慎坠地后易破裂，在安装、使用过程中因其抗压性能不好，容易破损，这些也直接影响到垃圾箱的使用寿命。

发明内容：本实用新型的目的是提供一种地埋垃圾箱，用于解决传统的垃圾箱存在的结构复杂、重量重、造价高和故障率高的问题。

本实用新型是这样实现的：这种地埋垃圾箱，包括外桶、内桶或内置袋，内桶或内置袋置于外桶内，外桶上端联接有大盖支撑圈，大盖支撑圈上活动联接有大盖，大盖带有垃圾投放口，大盖上活动连接有小盖，大盖内安装有开启小盖的脚踏开启机构，小盖扣置在大盖上时，封住大盖的垃圾投放口。

上述方案中的外桶为圆台形的，桶身采用波纹结构。

上述方案中的脚踏开启机构的脚踏柄与小盖支撑板之间通过连杆活动连接。

更进一步的是上述方案中的脚踏开启机构还包括阻尼器，阻尼器的一端安装在连杆上，另一端安装于大盖上。

有益效果：

- 1、本实用新型结构简单，使用时故障率低，寿命长。
- 2、本实用新型重量轻，造价低。
- 3、本实用新型中外桶的桶身采用波纹结构，抗压性能好，不会因冻胀而破裂，抗压、抗冲击性能好，不慎坠地也不易破裂；另外，采用波纹结构后，

外桶周围的土自动填充到外桶的波谷中后，还可以起到防漂浮的作用。

附图说明：

图 1 是本实用新型第一种实施方式的结构示意图；

图 2 是本实用新型第二种实施方式的结构示意图；

图 3 是本实用新型第二种实施方式处于开启状态的结构示意图；

图 4 是本实用新型第二种实施方式小盖拆除后的俯视图；

图 5 是本实用新型第三种实施方式的结构示意图；

图 6 是本实用新型第四种实施方式的结构示意图。

具体实施方式：

结合附图对本实用新型做进一步说明：

图 1 是本实用新型第一种实施方式的结构示意图，如图所示，本实用新型包括埋于地下的外桶 1，置于外桶 1 内的内桶 18，外桶 1 上端安装有大盖支撑圈 2，外桶 1 上端和大盖支撑圈 2 通过螺栓紧固联接，大盖支撑圈 2 与大盖 3 通过铰链 22 实现转动联接，大盖 3 带有垃圾投放口 19，小盖 4 扣置在大盖 3 上时，封住大盖 3 的垃圾投放口 19；大盖 3 内侧后部固定有小盖座 7，小盖座 7 上有转动轴 9，小盖 4 内侧后部固定有小盖支撑板 20，小盖支撑板 20 通过转动轴 9 与大盖 3 转动联接；大盖 3 内安装有开启小盖 4 的脚踏开启机构，脚踏开启机构的具体构成为：大盖 3 内侧前部固定有脚踏器座 6、其下端通过转轴 8 与脚踏柄 5 的下端转动连接，脚踏柄 5 的前端从大盖 3 前侧伸出，为方便脚踏，脚踏柄 5 的前端安装有脚踏板 21；脚踏柄 5 的后端与连杆 10 的前端通过转轴 23 转动联接，连杆 10 的后端通过转轴 24 与小盖支撑板 20 的后端转动联接；连杆 10 和大盖 3 之间联接有阻尼器 12，阻尼器 12 的一端安装在连杆 10 上，另一端安装于大盖 3 上；大盖支撑圈 2 上安装有拉板 13，该拉板 13 上连接有地脚板 14。

在实际使用时，当踏下脚踏板 21 时，脚踏柄 5 以转轴 8 为转动点转动，拉动连杆 10 前移，连杆 10 拉动小盖支撑板 20 以转轴 9 为转动点转动，此时，小盖 4 打开，将垃圾通过垃圾投放口 19 投入到内桶 18 内；抬脚后，小盖 4 在自重的作用下，自动关闭，小盖 4 扣置在大盖 3 上时，封住大盖的垃圾投放口 19，

小盖 4 关闭时,在阻尼器 12 的阻力作用下,慢慢回落,可避免产生噪音。在收垃圾时,用手抬起脚踏柄 5,大盖 3 打开,此时,将内桶 18 从外桶 1 中提出,将桶内垃圾倒入车内,放回内桶 18,将大盖 3 关闭,即完成了垃圾收运过程。

图 2、图 3、图 4 提供了本实用新型第二种实施方式的结构示意图,如图所示,这种地埋垃圾箱与图 1 所示的地埋垃圾箱不同之处在于,本实施方式中外桶 1 为圆台形的,桶身采用波纹结构,抗压、抗冲击性能好,还可以起到防漂浮的作用。本实施方式中的其它结构与图 1 所示的相同。

图 5 提供了本实用新型第三种实施方式的结构示意图,如图所示,这种地埋垃圾箱与图 1 所示的地埋垃圾箱不同之处在于,本实施方式中外桶 1 为圆台形的,桶身采用波纹结构,脚踏开启机构中的连杆 10 分为两段,并且通过一个拉力大于小盖开启力的防护弹簧 11,将上述两段连杆连接在一起。当外力同时作用于脚踏板 21 和小盖 4 上时,防护弹簧 11 首先拉伸,对脚踏开启机构起到保护作用,防止脚踏开启机构被破坏,产生断裂。本实施方式中的其它结构与图 1 所示的相同。

图 6 提供了本实用新型第四种实施方式的结构示意图,如图所示,这种地埋垃圾箱与图 1 所示的地埋垃圾箱不同之处在于,本实施方式中外桶 1 为圆台形的,桶身采用波纹结构,大盖支撑圈 2 和大盖 3 之间,连接有气弹簧 16 和控制大盖 3 开度的拉链 17,在大盖 3 和大盖支撑圈 2 之间联接的气弹簧 16,可使大盖 3 容易开启和在风天不会突然回落,在大盖 3 和大盖支撑圈 2 之间联接拉链 17,可控制大盖 3 的开度。本实施方式中的其它结构与图 1 所示的相同。

本实施方式在收垃圾时,用手抬起脚踏柄 5,大盖 3 在气弹簧 16 的助力作用下,大盖 3 轻盈打开,同时拉链 17 限制开启角度,此时,将内桶 18 从外桶 1 中提出,将桶内垃圾倒入车内,放回内桶 18,关闭大盖 3,即完成了垃圾收运过程。

为了结构更加简单,降低造价,本实用新型中的内桶 18 还可以用垃圾袋来代替使用。

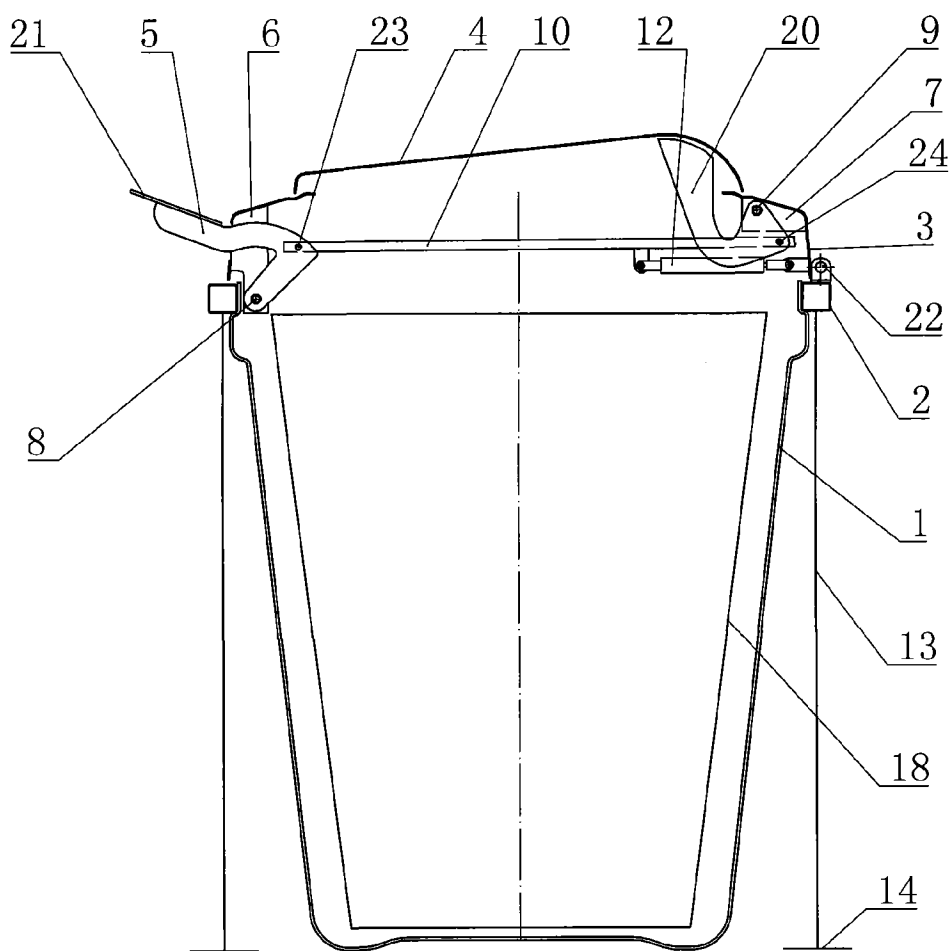


图1

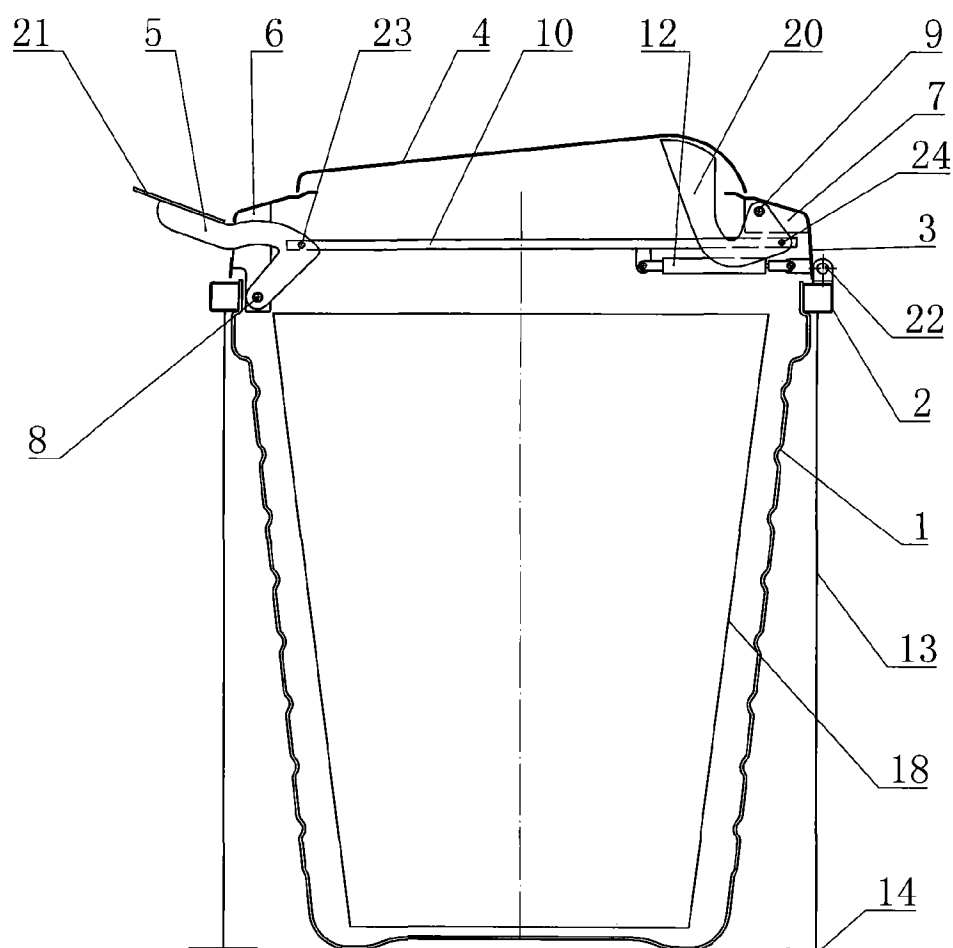


图2

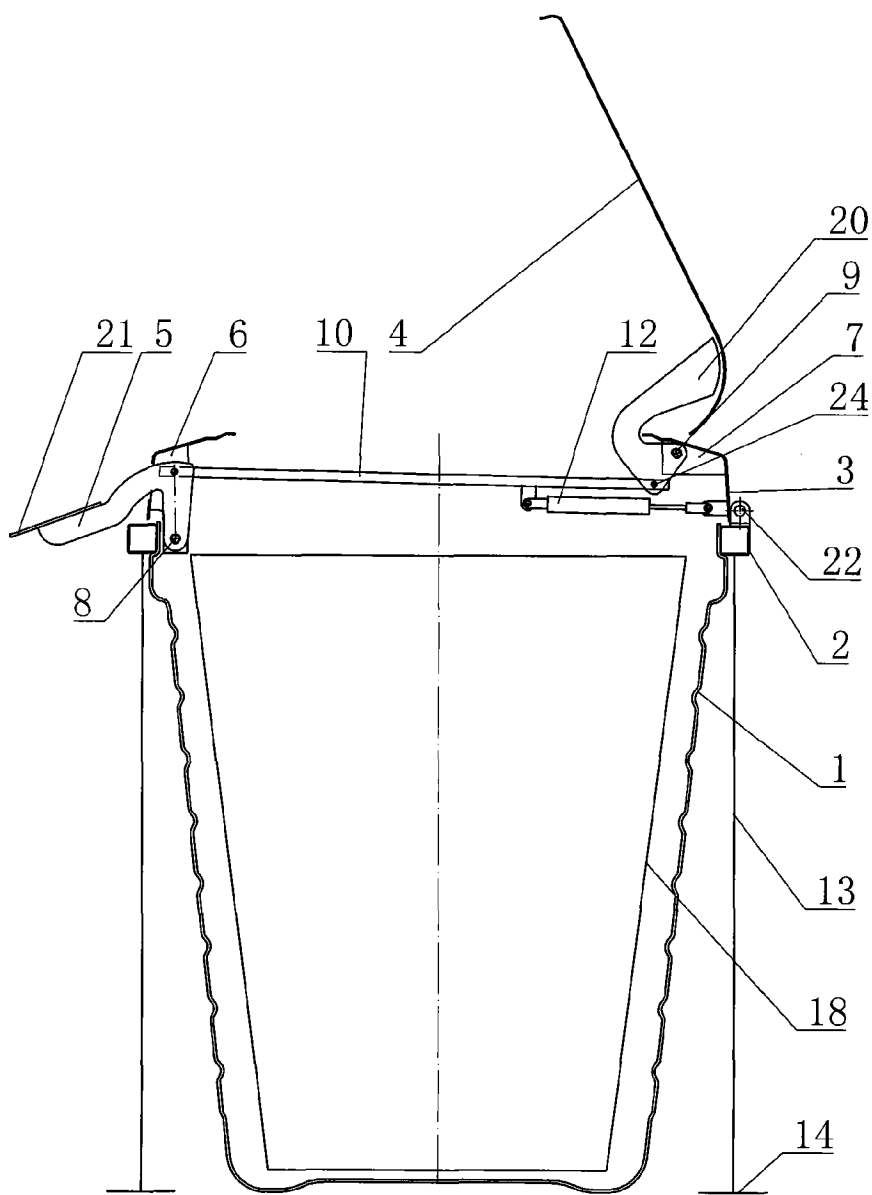


图3

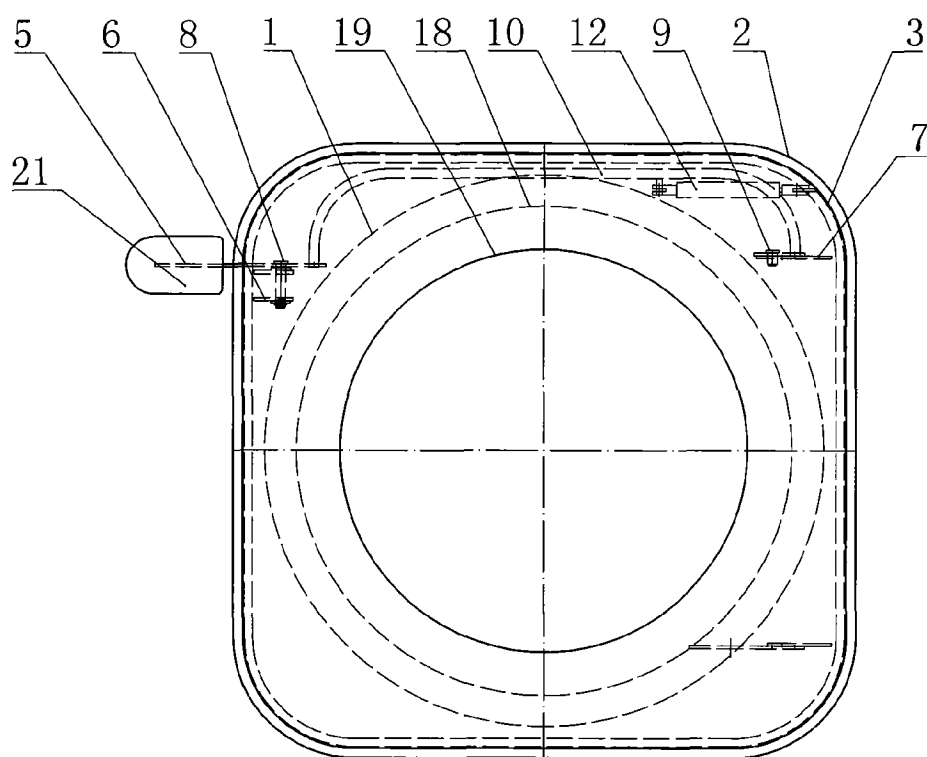


图4

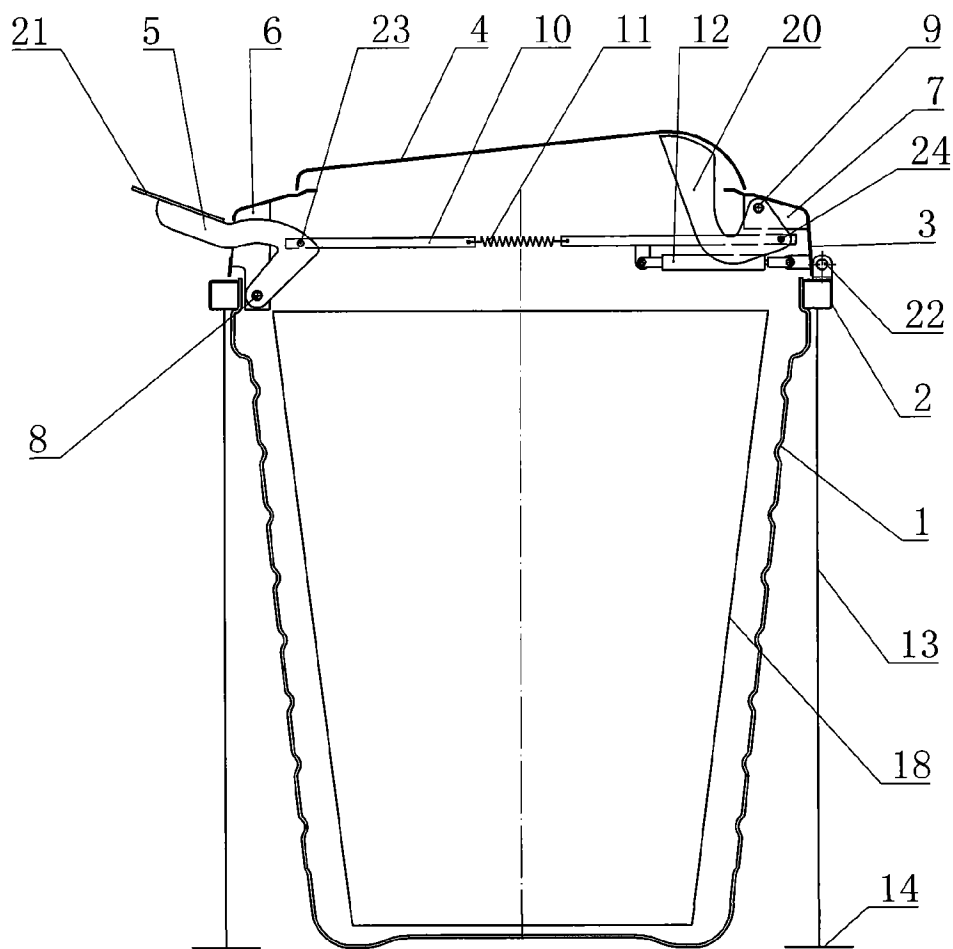


图5

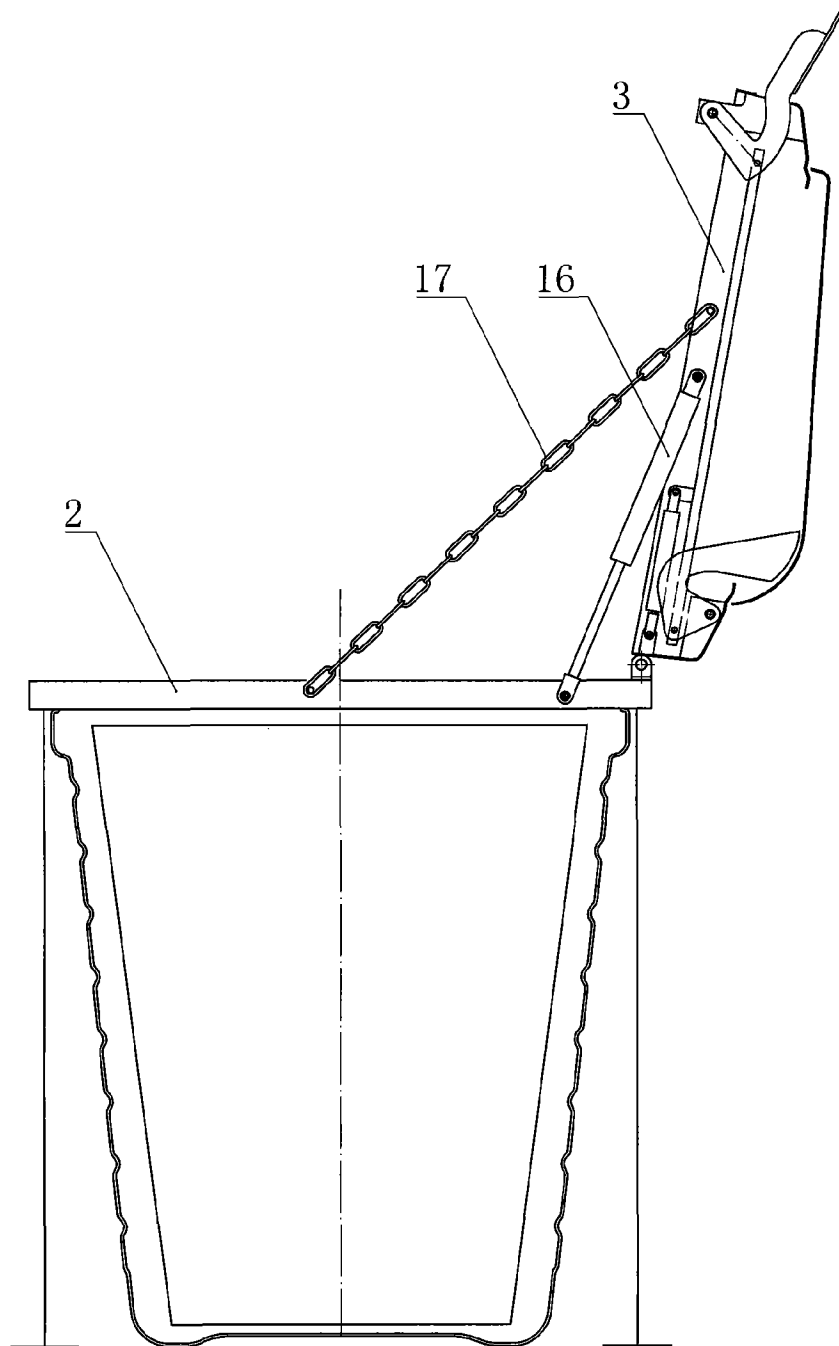


图6



Espacenet

Bibliographic data: CN201447201 (U) — 2010-05-05

Step-on garbage can positioning device

Inventor(s): CHAOXING LIN $\pm$ (LIN CHAOXING)
Applicant(s): CHAOXING LIN $\pm$ (LIN CHAOXING)
Classification: - **international:** **B65D43/26; B65F1/14**
- **cooperative:**
Application number: CN2009252977U 20090320
Priority number(s): CN2009252977U 20090320

Abstract of CN201447201 (U)

The utility model discloses a step-on garbage can positioning device. The step-on garbage can positioning device is characterized in that the bottom of the garbage can is provided with a positioning device that can fold and is symmetrically installed with a foot treadle; the positioning device comprises a positioning plate and a locking button, the positioning plate is a sliding plate on which a guide rail with certain stroke is arranged, and two ends of the guide rail are provided with positioning holes; the locking button is a button type plastic rubber plate that is provided with a clamping post capable of being clamped in the positioning hole; when in use, the forward lean moment of the garbage can is counteracted under the positioning action of the positioning device; and the garbage and the wall retain the distance of the width of the positioning device, and when the cover of the garbage can is turned over, the cover is not stopped back by the wall and the phenomenon that the garbage is scattered on the ground does not occur. The step-on garbage can positioning device is widely applied for the daily life of people.



(12) 实用新型专利

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B65D 43/26 (2006.01)

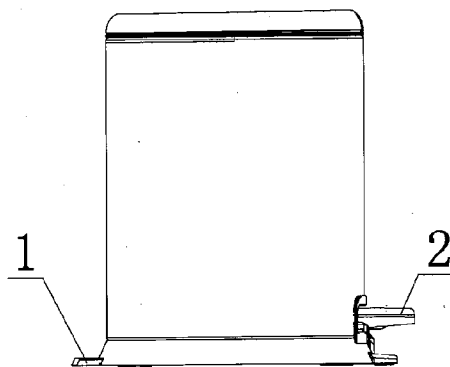
权利要求书 1 页 说明书 2 页 附图 3 页

(54) 实用新型名称

一种脚踏式垃圾桶定位装置

(57) 摘要

本实用新型公开了一种脚踏式垃圾桶定位装置,其特征在于垃圾桶的底部安装有能收合的定位装置,定位装置与脚踏板对称安装;所述定位装置包括定位板和锁紧按钮,定位板为一滑板,其上设有 一定行程的导轨,导轨两端设有定位孔;锁紧按钮为一按钮式的塑料胶板,其上设有能卡进定位孔的卡柱;使用中,定位装置的定位作用下,垃圾桶向前倾的力矩被抵消;垃圾桶与墙壁保持定位装置宽度的距离,翻盖不会被墙壁挡回,不会出现垃圾散地的现象;广泛应用于人们的日常生活中。



1. 一种脚踏式垃圾桶定位装置,其特征在于垃圾桶的底部安装有能收合的定位装置(1),定位装置(1)与脚踏板(2)对称安装。
2. 根据权利要求1所述的一种脚踏式垃圾桶定位装置,其特征在于所述定位装置(1)包括定位板(11)和锁紧按钮(12),定位板(11)为一滑板,其上设有行程的导轨(13),导轨(13)两端设有定位孔(14);锁紧按钮(12)为一按钮式的塑料胶板,其上设有能卡进定位孔(14)的卡柱(15)。
3. 根据权利要求1、2所述的一种脚踏式垃圾桶定位装置,其特征在于所述的锁紧按钮(12)设于垃圾桶底座上。
4. 根据权利要求1所述的一种脚踏式垃圾桶定位装置,其特征在于所述的定位装置(1)收合后藏于垃圾桶的桶底里。

一种脚踏式垃圾桶定位装置

技术领域

[0001] 本实用新型涉及一种脚踏式垃圾桶,特别一种能让翻盖有足够空间打开的脚踏式垃圾桶定位装置。

背景技术

[0002] 目前,大多数垃圾桶都注重里面结构以及外观的设计,以突现亮丽的外观,忽略了垃圾桶自身的根本操作稳定性问题,现有的脚踏式垃圾桶外型多为柱状体,其底部安装有脚踏板,当使用者按下脚踏板时,垃圾桶在顺时针的力矩作用下会有向前倾的动作,使垃圾桶发生摇晃,如果翻盖的重量过重时,翻盖无法完全被打开,或不能完全被打开,这种情况可能导致垃圾散地或垃圾扔不准,欠缺操作稳定性,大多数垃圾桶靠墙壁放置,往往还会出现翻盖打开到一半就被墙壁挡回的现象,翻盖无法正常完全打开,这样结构的垃圾桶会给人们的生活造成不便。

发明内容

[0003] 为了克服现有功能技术的不足,本实用新型提供一种能让翻盖有足够空间打开的脚踏式垃圾桶定位装置。

[0004] 本实用新型解决其技术问题所采用的技术方案是:

[0005] 一种脚踏式垃圾桶定位装置,其特征在于垃圾桶的底部安装有能收合的定位装置,定位装置与脚踏板对称安装;所述定位装置包括定位板和锁紧按钮,定位板为一滑板,其上设有一定行程的导轨,导轨两端设有定位孔;锁紧按钮为一按钮式的塑料胶板,其上设有能卡进定位孔的卡柱;所述的锁紧按钮设于垃圾桶底座上;所述的定位装置收合时藏于垃圾桶的桶底里。

[0006] 本实用新型的有益效果是:本实用新型的脚踏式垃圾桶定位装置根据人们使用时垃圾桶的受力原理而增加了定位装置;定位装置与脚踏板对称安装,在操作时,定位装置顶住墙壁,脚踩下脚踏板,定位装置的定位作用下,垃圾桶向前倾的力矩被抵消;垃圾桶与墙壁保持定位装置宽度的距离,翻盖不会被墙壁挡回,翻盖可以完全翻开,扔垃圾时,垃圾桶也能保持稳定操作,不会出现垃圾散地的现象;而且在不使用定位装置的情况下,通过锁紧按钮可以收藏于桶体内,美观整齐。

附图说明

[0007] 下面结合附图和实施例对本实用新型进一步说明。

[0008] 图1是本实用新型的结构示意图;

[0009] 图2是本实用新型的仰视结构示意图;

[0010] 图3是本实用新型的件11的结构示意图;

[0011] 图4是本实用新型的件12的结构示意图。

具体实施方式

[0012] 参照图 1、图 2、图 3、图 4，一种脚踏式垃圾桶定位装置，垃圾桶的底部安装有能收合的定位装置 1，定位装置 1 与脚踏板 2 对称安装，并且定位装置 1 的宽度跟脚踏板 2 的相近。所述的定位装置 1 收合后藏于垃圾桶的桶底里。

[0013] 定位装置 1 包括定位板 11 和锁紧按钮 12，定位板 11 为一塑料滑板，外边缘紧跟垃圾桶桶底的外边缘形状，定位板 11 上设有一定行程的导轨 13，导轨 13 两端设有定位孔 14；锁紧按钮 12 为一按钮式的塑料胶板，锁紧按钮 12 带有一定的弹性，其上设有能卡进定位孔 14 的卡柱 15。所述定位板 11 上的定位孔 14，一个为定位板 11 被拉出使用状态下的锁紧定位孔，另一个侧为定位板 11 被收藏的状态下的锁紧定位孔。

[0014] 在实际使用中，人们通常把垃圾桶依靠墙壁摆放，首先拉出定位装置 1，让定位装置 1 依靠墙壁，当人们要扔垃圾时，脚踩下脚踏板 2，由于定位装置 1 顶住墙壁，脚踩下脚踏板 2，定位装置 1 的定位作用下，垃圾桶向前倾的力矩被抵消；垃圾桶与墙壁保持定位装置 1 宽度的距离，翻盖 2 不会被墙壁挡回，，垃圾桶的翻盖 2 就会稳定的打开，达到很好的扔垃圾效果。这样的结构，扔垃圾时，垃圾桶能保持稳定，不会出现垃圾散地的现象；而且在不使用定位装置的情况下，定位装置可以收藏于桶体内，美观整齐，广泛应用于人们的日常生活中。

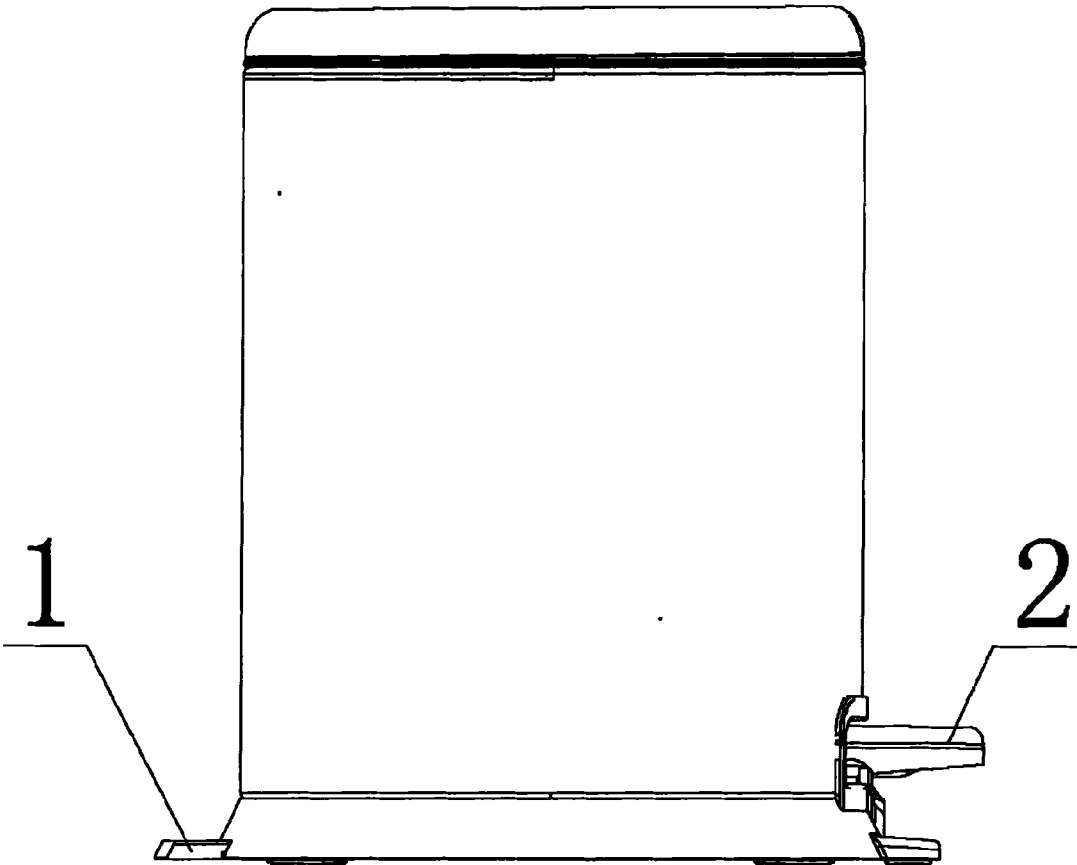


图 1

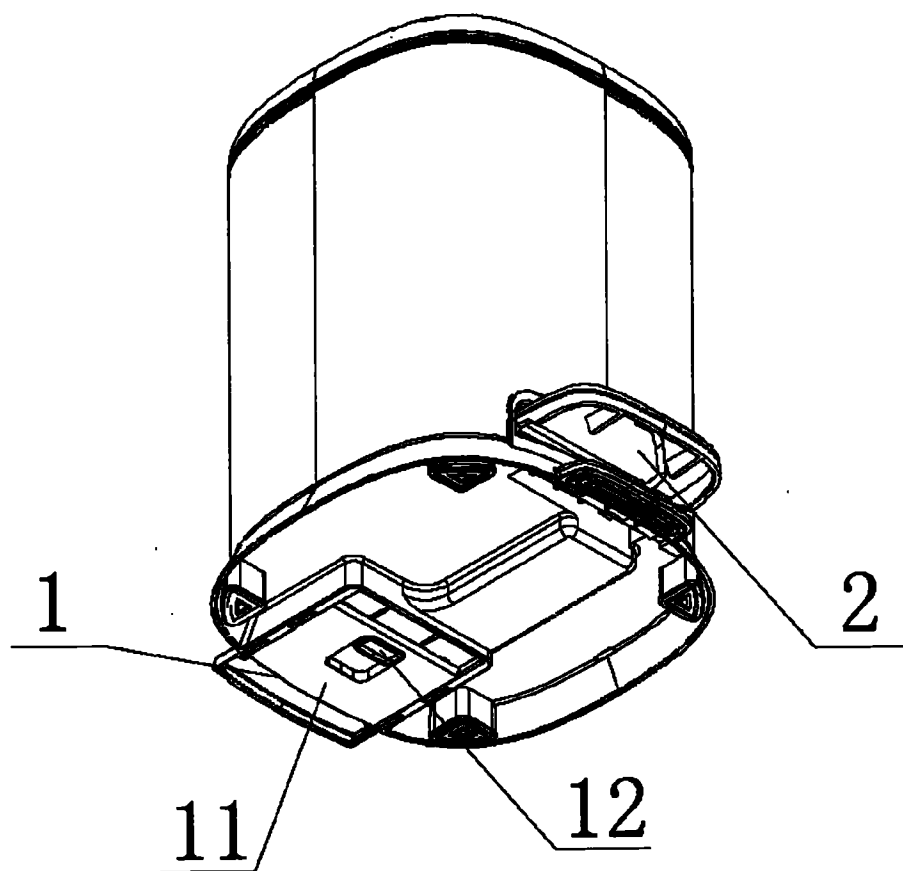


图 2

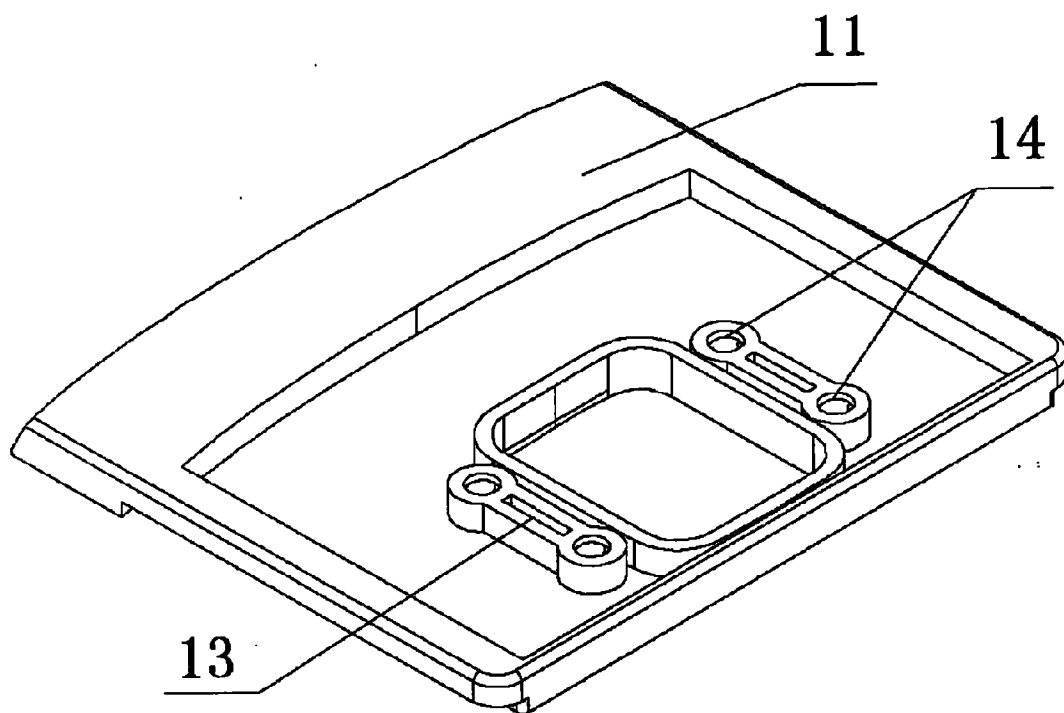


图 3

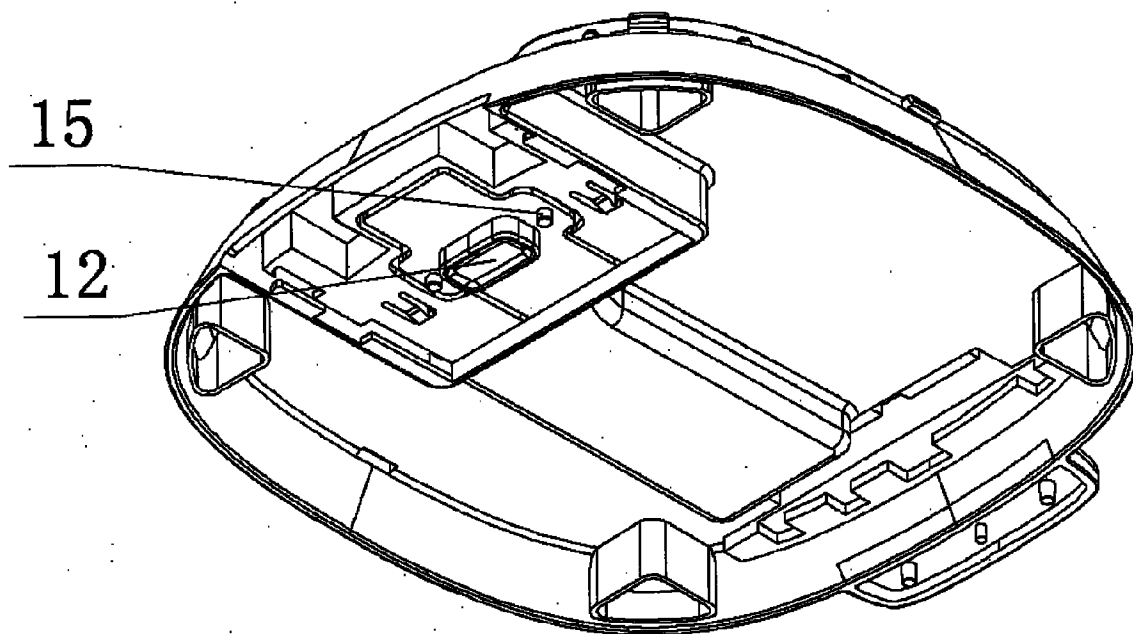


图 4

Buffer means having a trash can lid

Abstract

translated from Chinese

The present invention relates to a trash can lid having a damping device, comprising a tub body and a lid hinged to the top of the open end of the hinge portion is provided with a spring, is provided at the side edge of the lid corresponding to the tub rear mushroom rubber-like elastic buffer, the buffer against the lid member side when the lid is opened, the opening speed of the lid slowing, rubber cushion member hollow interior, the intermediate post is provided with positioning, positioning post card installed in the tub on, when the lid is opened quickly under the action of the spring, the rear lid member first contacts the top buffer mushroom, mushroom-shaped dome so that the cushioning member is deformed, whereas slowing the speed of opening of the lid last, the lid rigid collision abnormal noise does not occur with buckets or other body parts, but also so that each connection is not collision damage, so the trash is more reliable and durable, easily accepted by consumers.

Classifications

machine-classified

The classifications are assigned by a computer and are not a legal conclusion.
Google has not performed a legal analysis and makes no representation as to the accuracy of the classifications listed.

CN201597962U

CN Grant

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Other languages

Chinese

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Priority date

The priority date is an assumption and is not a legal conclusion.

Google has not performed a legal analysis and makes no representation as to the accuracy of the date listed.

2009-12-05

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2009-12-05 CN 200920316639

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Description

translated from Chinese

Buffer means having a trash can lid

FIELD

[0001] The present invention relates to a trash can, in particular, having a damping device lid trash.

Background technique

[0002] The structure comprises a trash barrel and heads, and can be divided according to the operation mode control and manual control of the foot mode, when the product is controlled manually, in order to facilitate opening the lid, typically between lid and bowl design button switch, is mounted on a spring hinge lid and the bowl, when the button switch is pressed, lid opening operation of the mechanical structure, so that the lid and the bowl together on the original release, the lid under the action of the spring bounced open, since the spring itself does not have buffering function, and therefore more quickly when the lid is opened, and will inevitably collide with the rear portion of the barrel when the maximum angle of abnormal sound, some interference to the user ; after repeated use for a long time because of collisions will damage the connector, with the normal use of the product impact.

SUMMARY

[0003] In order to overcome the deficiencies of the prior art, the present invention provides a structurally simple, reliable and durable cushioning device having a lid trash.

[0004] aspect of the present invention is used:

[0005] The cushioning device having a bin lid, the lid comprising a barrel and hinged to the top of the open end of the hinge portion is provided with a spring, is provided with a mushroom-shape in a side surface of the rear edge of the lid corresponding to the rear barrel elastic rubber cushion member, the cushion member against the lid when the lid is opened at the side, lid opening speed slows, the rubber cushion member hollow interior, the intermediate post is provided with positioning, positioning post card installed in the tub on the body.

[0006] Further improvements of the present invention, the side surface of the bowl is provided with a support block, the support block is provided with an intermediate positioning hole, the positioning post through the positioning hole, the peripheral edge of the mushroom-shaped cushioning member and the support block contact the upper surface.

[0007] The present invention further improvement, the lower end of the standoff is positioned protrusions having a diameter larger than the hole diameter.

[0008] The beneficial effects of the present invention are: The barrel is provided at a rear portion of the lid is provided adjacent to a mushroom shape with a small elastic rubber cushion member, when the lid is opened by the spring quickly after the lid first contacts the top side of the mushroom-shaped cushion member, so that the mushroom-shaped cushioning member is pressed dome is deformed, whereas slowing the speed of opening of the last lid, to shock effect, so that the lid does not occur with the bowl or other parts rigid collision abnormal sound, but also so that each connection is not collision damage, so the trash is more reliable and durable, the user-friendly design is also more vulnerable to consumer acceptance.

BRIEF DESCRIPTION

[0009] Next, the present invention is further described in conjunction with the accompanying drawings and embodiments pair.

[0010] FIG. 1 is a structural diagram of the present invention novel;

[0011] FIG. 2 is a configuration diagram of a partial rear trash;

[0012] FIG. 3 is a rubber bumper exploded configuration diagram of the trash can;

[0013] FIG. 4 is a partial enlarged view of FIG. 3;

[0014] FIG. 5 is a schematic diagram of the trash open state;

[0015] FIG. 6 is a schematic diagram of another state of the bin lid opening;

[0016] FIG. 7 is a perspective view of a rubber cushion;

[0017] FIG. 8 is a sectional structural view of a rubber cushion.

detailed description

[0018] Referring to FIG. 1 to FIG. 8, second buffer means having a trash lid, the lid comprising a barrel and hinged to the top 12, the hinge portion 4 is provided with a spring opening the lid, the side surface of the barrel corresponding to the edge of the lid is provided with a mushroom-shaped elastic rubber cushion member 3 after 2, when pressed trash cover open button, the lid opens about a rotating shaft of the hinge portion 4 under the action of the spring, the lid 2 will be pressed against the rear side of the cushion member and the mushroom-shaped first contacts the top of the cushioning member 3, the buffer member 3 of mushroom-like dome is deformed, thereby slowing the speed of the final stage of the opening, until the lid opening operation of the lid 2 complete stop, to the shock effect, so that the trash is not abnormal noises during unsealing, but also extend the life of various components, the design of the rubber cushion member 3 is hollow interior, when the lid 2 is subjected to pressure, buffer hemispherical housing member is deformed quickly offset term pressure lid, the lid opening speed slow, mushroom-shaped cushion member in addition to a hemispherical shape may be oval, likewise cushion ; In addition, with the intermediate positioning Column 31, card positioning column 31 mounted on the tub 1, when the mushroom-shaped dome is deformed, the positioning post 31 is also moved down, a certain space on the displacement of the tub body, which is positioned to maintain action.

[0019] In order to make the product more reasonable mechanics structure, the design of the rear barrel 1 integrally provided with a side surface of the support block 11, support block 11 is provided with an intermediate positioning hole 12, the positioning posts 31 through the positioning hole 12, mushroom-shaped peripheral edge of the cushion member 32 contacts the upper surface 3 of the support block 11. The barrel may be made of the integration, the edge may be set in a circular bowl body sleeved week, integrated manufacturing sheath edge and the support block.

[0020] positioning post 31 has a diameter greater than a diameter of the positioning hole 12 of the boss 33, the buffer member does not come off easily.

[0021] The above mentioned is only preferred embodiments of the present invention embodiment, which does not limit the scope of the present invention novel protection, it is substantially the same as long as the means to achieve the object of the present invention should fall into the scope of protection of the present invention.

Claims (3)

translated from Chinese

1. Having a lid (2) buffer means trash, comprising a barrel (1) and hinged to the top of the lid (2), the hinge portion (4) is provided with a lid opening spring, wherein: said barrel (1) disposed at the rear edge of the corresponding lid (2) has a mushroom-shaped elastic rubber cushion member (3), the buffer member (3) against the lid when the lid (2) opening (2) rear edge, slowing lid (2) opening speed, the shock absorbent rubber element (3) inside the hollow, is provided with an intermediate positioning column (31), the positioning posts (31) on a card mounted in the tub (1).

2. Trash having a lid 2. (2) of the damping device according to claim 1, wherein: said barrel (1) rear side provided with a support block (11), a support block (11) disposed intermediate a positioning hole (12), said positioning posts (31) through the positioning hole (12), contacts the upper surface circumferential edge of the mushroom-shaped bumper (3) (32) and the support block (11).
3. According to claim 1 having the lid (2) trash buffer means, wherein: a lower end of said positioning posts (31) having a diameter larger than the positioning hole (12) diameter projection (33).



(12) 实用新型专利

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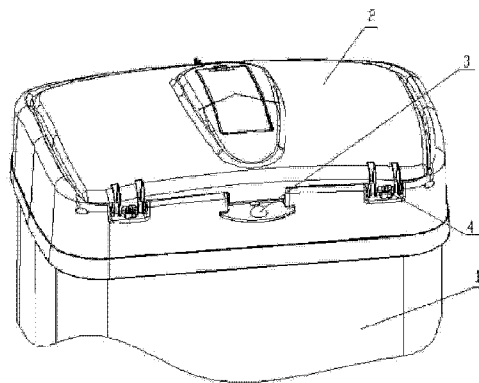
权利要求书 1 页 说明书 2 页 附图 4 页

(54) 实用新型名称

具有桶盖缓冲装置的垃圾桶

(57) 摘要

本实用新型涉及一种具有桶盖缓冲装置的垃圾桶,包括桶体和铰接于顶部的桶盖,该铰接部设置有开盖弹簧,桶体后侧面在对应于桶盖后边缘处设置有蘑菇状的弹性橡胶缓冲件,该缓冲件在桶盖打开时顶住桶盖的后侧边,减缓桶盖的打开速度,橡胶缓冲件内部中空,中间设有定位柱,定位柱卡装于桶体上,当桶盖在弹簧的作用下快速打开时,桶盖的后侧首先接触到缓冲件的蘑菇状顶部,使缓冲件的蘑菇状圆帽产生变形,反之减缓了桶盖最后的打开速度,使桶盖不会与桶身或其它零件发生刚性碰撞而发出异响,同时也使得各连接件不会因碰撞而受损,令垃圾桶更加可靠耐用,容易受到消费者的接受。



1.

具有桶盖 (2) 缓冲装置的垃圾桶, 包括桶体 (1) 和铰接于顶部的桶盖 (2), 该铰接部 (4) 设置有开盖弹簧, 其特征在于: 所述桶体 (1) 后侧在对应于桶盖 (2) 后边缘处设置有蘑菇状的弹性橡胶缓冲件 (3), 该缓冲件 (3) 在桶盖 (2) 打开时顶住桶盖 (2) 的后侧边, 减缓桶盖 (2) 的打开速度, 所述橡胶缓冲件 (3) 内部中空, 中间设有定位柱 (31), 定位柱 (31) 卡装于桶体 (1) 上。

2.

根据权利要求 1 所述的具有桶盖 (2) 缓冲装置的垃圾桶, 其特征在于: 所述桶体 (1) 后侧面设置有支撑块 (11), 支撑块 (11) 的中间设有定位孔 (12), 所述定位柱 (31) 从定位孔 (12) 中穿过, 缓冲件 (3) 的蘑菇状周缘 (32) 与支撑块 (11) 的上表面接触。

3.

根据权利要求 1 所述的具有桶盖 (2) 缓冲装置的垃圾桶, 其特征在于: 所述定位柱 (31) 的下端具有直径大于定位孔 (12) 直径的凸起 (33)。

具有桶盖缓冲装置的垃圾桶

技术领域

[0001] 本实用新型涉及一种垃圾桶,特别是具有桶盖缓冲装置的垃圾桶。

背景技术

[0002] 垃圾桶的结构包括桶体和桶盖,按照操作方式又可分脚踏控制方式和手动控制方式,当产品采用手动控制时,为了开盖方便,通常在桶身与桶盖之间设计有按钮开关,在桶盖与桶身铰接处安装有弹簧,当按下按钮开关时,开盖机械结构动作,令原本合上的桶盖与桶身脱扣,桶盖在弹簧的作用下被弹起打开,由于弹簧自身不具有缓冲功能,因而桶盖在打开时较快速,并且在达到最大角度时难免会与桶体的后部产生碰撞而发出异响,给用户带来一定的干扰;在使用时间长后还会因反复撞碰而损坏连接件,影响产品的正常用使用。

实用新型内容

[0003] 为了克服现有技术的不足,本实用新型提供一种结构简单、可靠耐用的具有桶盖缓冲装置的垃圾桶。

[0004] 本实用新型所采用的技术方案是:

[0005] 具有桶盖缓冲装置的垃圾桶,包括桶体和铰接于顶部的桶盖,该铰接部设置有开盖弹簧,所述桶体后侧面在对应于桶盖后边缘处设置有蘑菇状的弹性橡胶缓冲件,该缓冲件在桶盖打开时顶住桶盖的后侧边,减缓桶盖的打开速度,所述橡胶缓冲件内部中空,中间设有定位柱,定位柱卡装于桶体上。

[0006] 本实用新型的进一步改进,所述桶体后侧面设置有支撑块,支撑块的中间设有定位孔,所述定位柱从定位孔中穿过,缓冲件的蘑菇状周缘与支撑块的上表面接触。

[0007] 本实用新型的进一步改进,所述定位柱的下端具有直径大于定位孔直径的凸起。

[0008] 本实用新型的有益效果是:本设在桶体后部与桶盖邻接处设置有小巧的蘑菇状弹性橡胶缓冲件,当桶盖在弹簧的作用下快速打开时,桶盖的后侧首先接触到缓冲件的蘑菇状顶部,使缓冲件的蘑菇状圆帽受压产生变形,反之减缓了桶盖最后的打开速度,达到防震效果,使桶盖不会与桶身或其它零件发生刚性碰撞而发出异响,同时也使得各连接件不会因碰撞而受损,令垃圾桶更加可靠耐用,该人性化的设计也更容易受到消费者的接受。

附图说明

[0009] 下面结合附图和实施例对本实用新型进一步说明。

[0010] 图 1 是本实用新型的结构示意图;

[0011] 图 2 是垃圾桶的后侧局部结构图;

[0012] 图 3 是橡胶缓冲件与垃圾桶的分解结构图;

[0013] 图 4 是图 3 的局部放大图;

[0014] 图 5 是垃圾桶的开盖状态示意图;

[0015] 图 6 是垃圾桶的另一开盖状态示意图;

[0016] 图 7 是橡胶缓冲件的立体图；

[0017] 图 8 是橡胶缓冲件的剖视结构图。

具体实施方式

[0018] 参照图 1 至图 8 所示,具有桶盖 2 缓冲装置的垃圾桶,包括桶体 1 和铰接于顶部的桶盖 2,该铰接部 4 设置有开盖弹簧,桶体 1 后侧面在对应于桶盖 2 后边缘处设置有蘑菇状的弹性橡胶缓冲件 3,当按下垃圾桶的开盖按钮时,桶盖在弹簧的作用下绕铰接部 4 的转轴旋转打开,桶盖 2 的后侧会压向缓冲件并首先接触到缓冲件 3 的蘑菇状顶部,使缓冲件 3 的蘑菇状圆帽产生变形,从而减缓了桶盖 2 的在最后阶段的打开速度,直至开盖动作完全停止,达到防震效果,使垃圾桶在开盖时不会发出异响,也延长了各部件的使用寿命,本设计的橡胶缓冲件 3 为内部中空,在受到桶盖 2 的压力时,缓冲件呈半球形的壳体产生变形,迅速抵消了来自桶盖的压力,减缓桶盖的打开速度,蘑菇状的缓冲件除了半球形形状外,也可以呈椭圆形,同样能够起到缓冲作用;此外,中间设有定位柱 31,定位柱 31 卡装于桶体 1 上,当蘑菇状的圆帽产生变形时,定位柱 31 也随之向下移动,在桶体上有一定的位移空间,保持其定位作用。

[0019] 为了令产品的力学结构更合理,本设计的桶体 1 后侧面一体化设置有支撑块 11,支撑块 11 的中间设有定位孔 12,定位柱 31 从定位孔 12 中穿过,缓冲件 3 的蘑菇状周缘 32 与支撑块 11 的上表面接触。所述桶体可以是一体化制成,也可以在桶身主体上周圆套设边套,边套与支撑块一体化制造。

[0020] 定位柱 31 的下端具有直径大于定位孔 12 直径的凸起 33,使缓冲件不容易脱落。

[0021] 以上所述只是本实用新型优选的实施方式,其并不构成对本实用新型保护范围的限制,只要是以基本相同的手段实现本实用新型的目的都应属于本实用新型的保护范围。

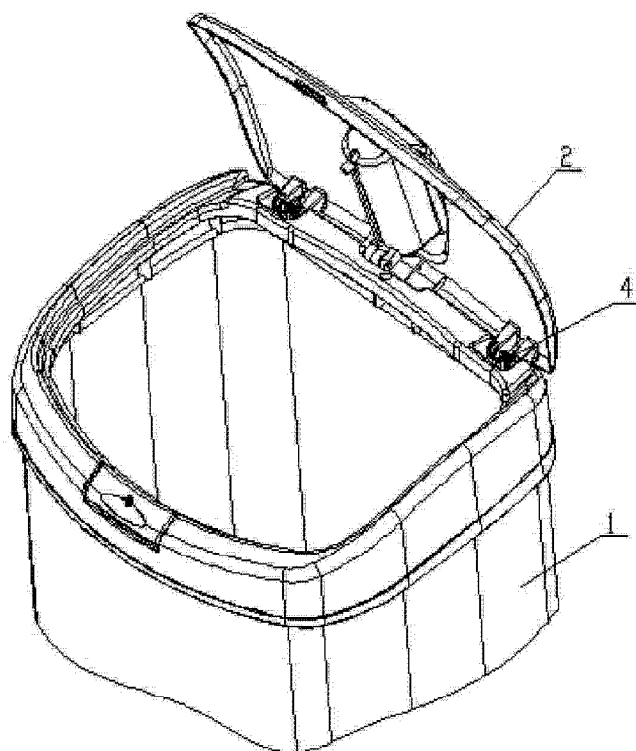


图 1

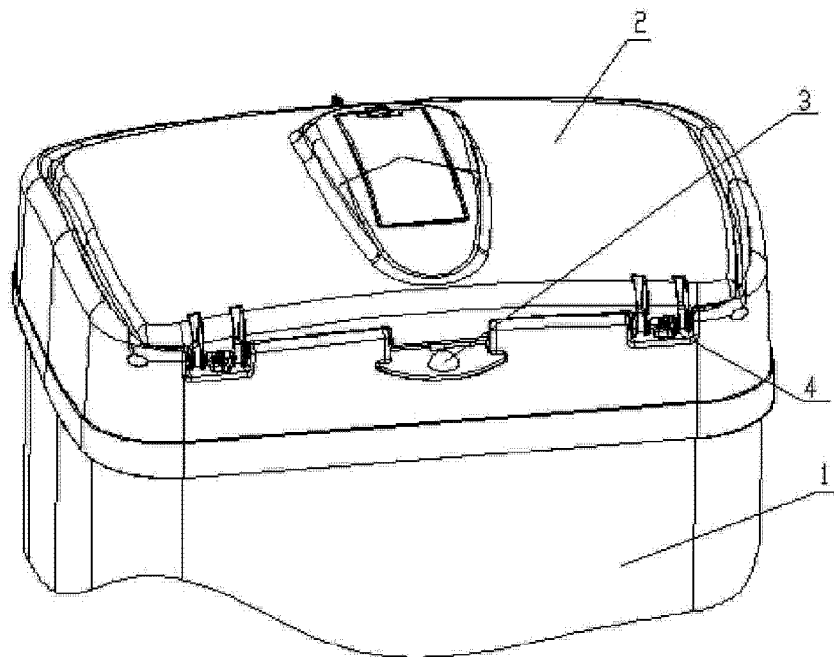


图 2

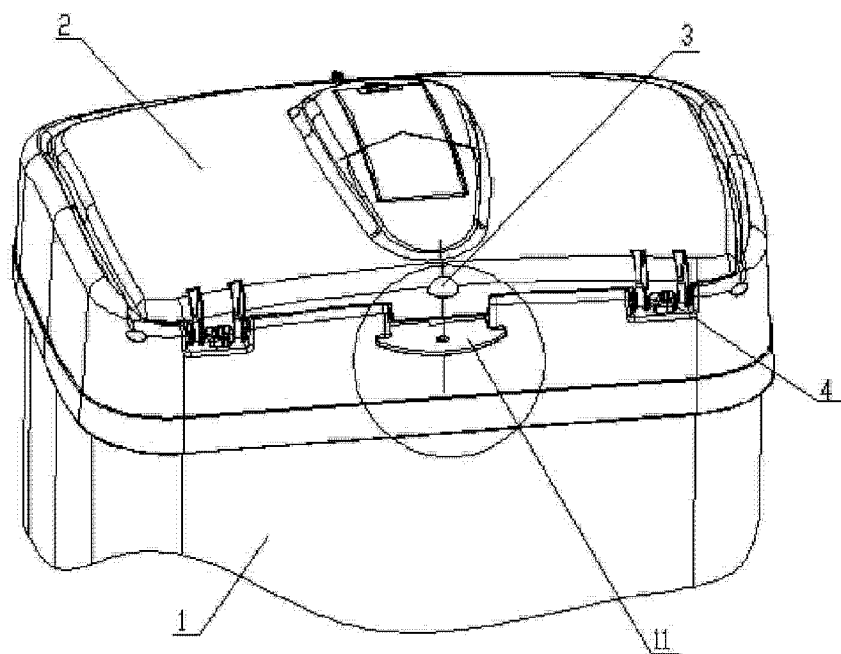


图 3

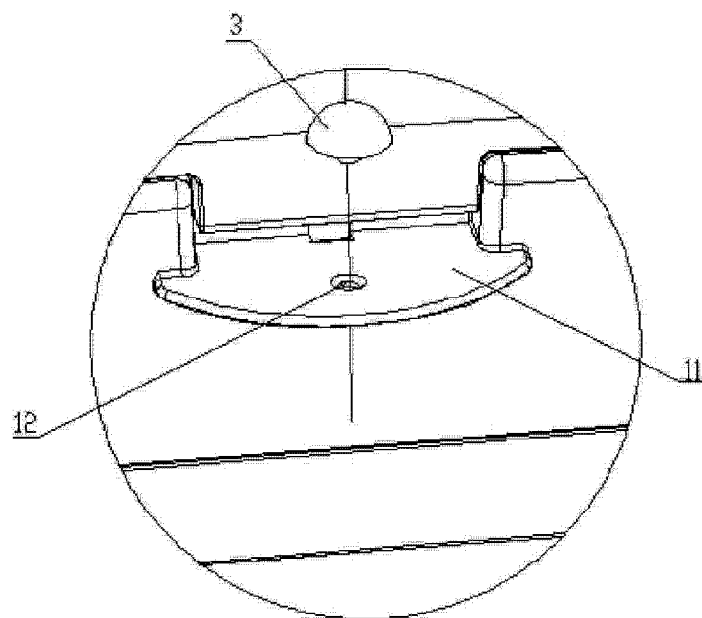


图 4

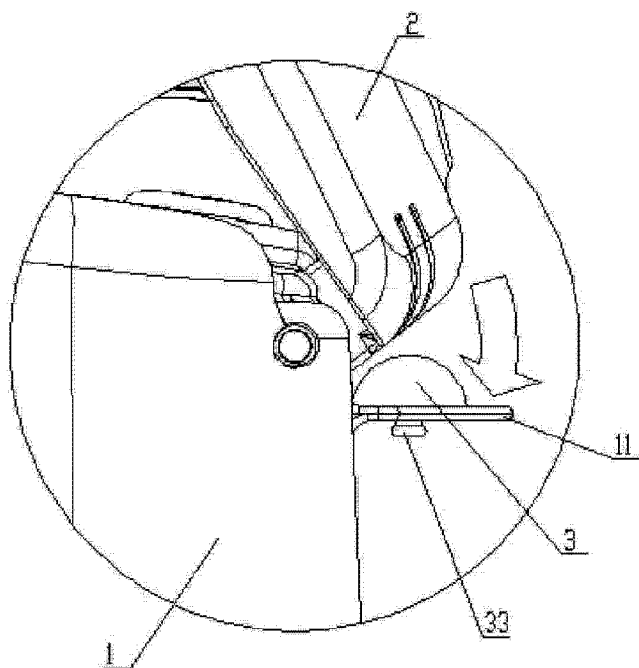


图 5

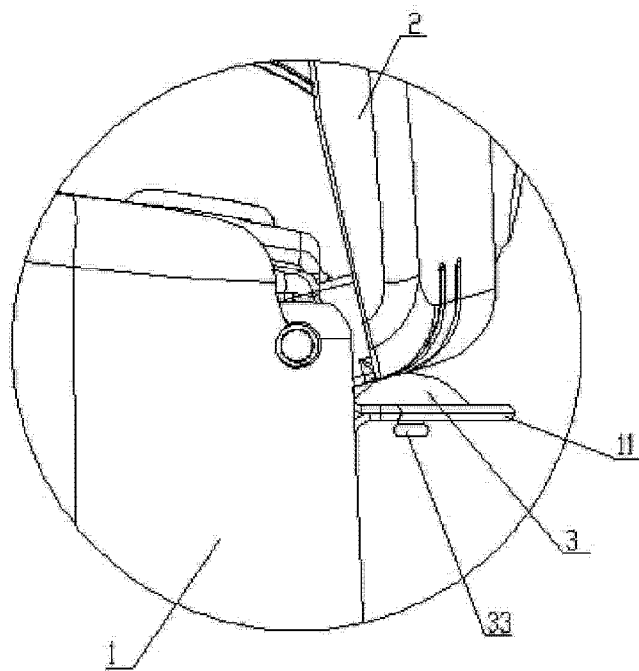


图 6

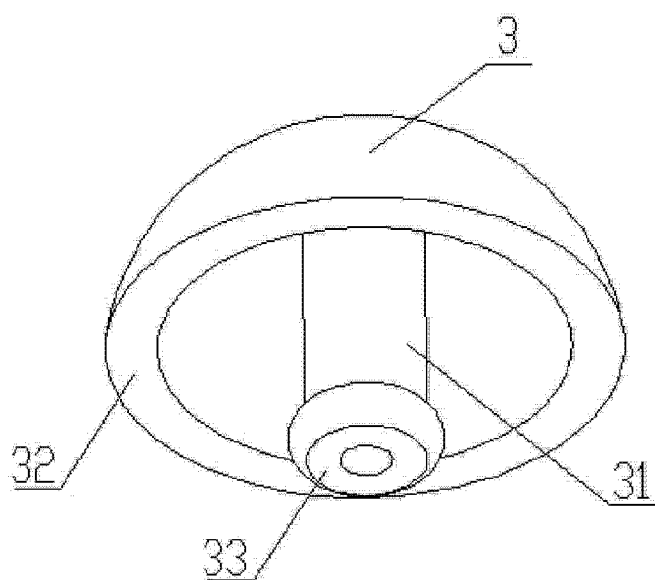


图 7

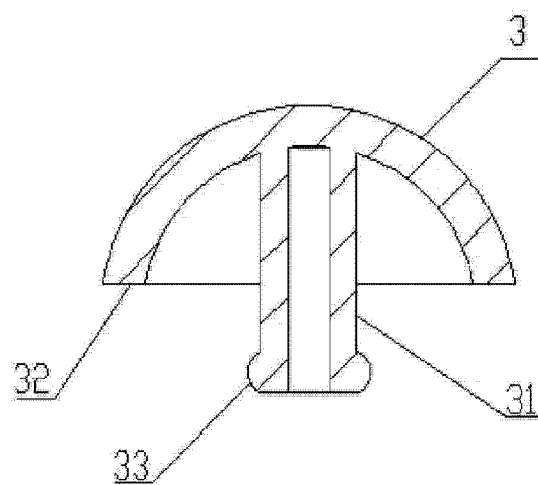


图 8



Espacenet

Bibliographic data: CN103207416 (A) — 2013-07-17

Human body infrared detector with self-regulating function and working method thereof

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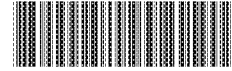
Classification: - **international:** **G01J5/00; G01V8/10**
 - **cooperative:**

Application number: CN20111340155 20120111 Global Dossier

Priority number(s): CN20111340155 20120111

Abstract of CN103207416 (A)

The invention relates to a human body detector, in particular to a human body infrared detector with a self-regulating function. The human body infrared detector comprises a master control unit, a passive infrared sensor circuit unit electrically connected with the master control unit through a signal amplifying circuit unit, a multicolor light-emitting circuit unit, a signal output circuit unit and a power source circuit unit for supplying power, wherein the multicolor light-emitting circuit unit and the signal output circuit unit are electrically connected with the master control unit. The multicolor light-emitting circuit unit comprises a plurality of different-color light-emitting elements which are respectively and electrically connected onto the master control unit, and the passive infrared sensor circuit unit comprises a passive infrared sensor which is arranged at the position where direct light or diffuse reflection light of all light-emitting elements can be received. The invention further discloses a working method of the human body infrared detector with the self-regulation function. The working method includes steps of: (1) human body detection; and (2) automatic regulation. The human body infrared detector is good in stability and capable of resisting changing of ambient light, and a working state lamp is attractive.



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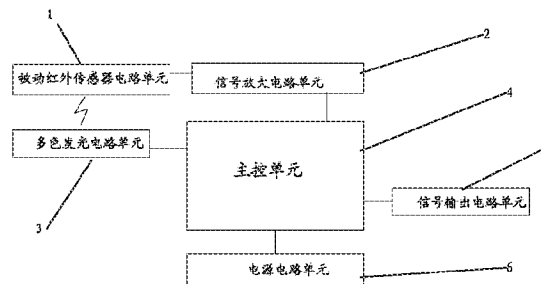
权利要求书2页 说明书4页 附图2页

(54) 发明名称

具自调节功能的人体红外探测器及其工作方法

(57) 摘要

本发明涉及人体探测器,公开了一种具自调节功能的人体红外探测器,包括一主控单元,通过一信号放大电路单元电连接主控单元的一被动红外传感器电路单元,电连接主控单元的一多色发光电路单元和一信号输出电路单元,以及供电的电源电路单元;所述多色发光电路单元包括多个分别电连接在主控单元上的不同颜色的发光元件,所述被动红外传感器电路单元包括一被动红外传感器,所述被动红外传感器设置在能接收到全部发光元件的直射光或漫反射光的位置。本发明还公开其工作方法,包括以下步骤:(1)、人体探测;(2)、自动调节。本发明稳定性好、能抗环境光变化,且工作状态灯美观。



CN 103207416 A

1. 一种具自调节功能的人体红外探测器,其特征在于:包括一主控单元,通过一信号放大电路单元电连接主控单元的一被动红外传感器电路单元,电连接主控单元的一多色发光电路单元和一信号输出电路单元,以及供电的电源电路单元;所述多色发光电路单元包括多个分别电连接在主控单元上的不同颜色的发光元件,所述被动红外传感器电路单元包括一被动红外传感器,所述被动红外传感器设置在能接收到全部发光元件的直射光或漫反射光的位置。

2. 根据权利要求1所述的具自调节功能的人体红外探测器,其特征在于:所述主控单元包括一具有数模转换功能的微处理器芯片。

3. 根据权利要求1所述的具自调节功能的人体红外探测器,其特征在于:所述不同颜色的发光元件为一红色发光二极管、一绿色发光二极管和一蓝色发光二极管。

4. 根据权利要求1所述的具自调节功能的人体红外探测器,其特征在于:所述主控单元还包括一热敏电阻。

5. 根据权利要求1所述的具自调节功能的人体红外探测器,其特征在于:所述主控单元由具有数模转换功能的微处理器芯片 U3、电阻 R11、热敏电阻 RX1、电阻 R15、跳线 JP1、电阻 R20、电容 C13、电容 C14、防拆开关 S1 和电阻 R21 组成;被动红外传感器电路单元由电阻 R2、电容 C9、被动红外传感器 PIR1、电容 C10 和电阻 R3 组成;所述传感器信号放大电路由内部包含运放 U2A 与运放 U2B 的双运放芯片,外围元件电阻 R4、电阻 R5、电阻 R6、电容 C5、电容 C11、电容 C4、电阻 R7、电阻 R8、电阻 R9、电阻 R10、电阻 R1、电容 C12、电容 C6、电容 C7 和电容 C8 组成;所述多色发光电路由开关 JP2、红色发光二极管 D1、分压电阻 R16、绿色发光二极管 D2、分压电阻 R17、蓝色发光二极管 D3 和分压电阻 R18 组成;所述信号输出电路由电阻 R19、输出接口 X1-3 组成;所述电源电路单元由电源接口 X1-1、电源接口 X1-2、电容 C1、电容 C2、电容 C3 和稳压芯片 U1 组成。

6. 根据权利要求5所述的具自调节功能的人体红外探测器,其特征在于:所述被动红外传感器 PIR1 采用尼塞拉的编号为 RE200B 的三端被动红外传感器。

7. 如权利要求1或5所述的具自调节功能的人体红外探测器的工作方法,其特征在于包括以下步骤:

(1)、人体探测:固定安装后接通外电源,电源电路单元开始供电,当有人体进入到被动红外传感器的探测区域,被动红外传感器探测到移动人体辐射的红外线,输出电信号并传输到信号放大电路单元将信号放大,放大后的信号输出到主控单元,主控单元对接收到的电信号进行模数转换,通过与预设或调整好的门限与脉冲时序进行比对,发出动作指令,由信号输出电路单元输出,用于控制继电器或无线的发射电路;

(2)、自动调节:当完成一次或预定的多次人体探测后,主控单元分别通过占空比不断变化的脉冲电流控制不同颜色的发光元件的发光和亮度,不同颜色的发光元件发出的光被混合在一起变成了各种颜色的光,这些光直射或漫反射在了被动红外传感器上,被动红外传感器感应到的电信号,传输到信号放大电路单元将信号放大,再输出到主控单元,由于不同颜色的发光元件主动发射的光谱以及强度是主控单元中的程序预设的,由主控单元计算出被动红外传感器与信号放大电路单元存在的离散性与误差以及在不同照度的光环境下失误几率,实时获取被动红外传感器的探测状态,随即予以自动调整探测触发门限与时序,进行自动补偿自动校准,令系统处于最佳探测状态;当有人体进入到被动红外传感器的探

测区域,再次执行步骤(1)。

8. 根据权利要求7所述的工作方法,其特征在于:所述步骤(2)自动调节中进行自动补偿自动校准时,利用热敏电阻对环境温度进行检测为主控单元提供温度参数。

具自调节功能的人体红外探测器及其工作方法

技术领域

[0001] 本发明涉及人体探测器,尤其是涉及一种具自调节功能的人体红外探测器及其工作方法。

背景技术

[0002] 目前市面上所出现的电子探测产品,一般由被动红外传感器、传感器信号放大电路,信号处理电路,电源电路,信号输出电路组成,另有工作指示灯供选用,这类产品的优点是已经较为成熟,广泛被用户接受与使用,但在使用中还存在有比较突出的不足:

[0003] 1、探测器用的被动红外传感器的参数指标具有离散性并且会随时间发生性能漂移,产品探测性能的一致性稳定性不好;

[0004] 2、探测器随着使用环境的不同以及日夜变化,工作的环境的光照度往往是变化的,其自动适应环境的智能化程度低,从而造成抗白光能力与灵敏度以及可靠性不足,容易漏报或误报;

[0005] 3、工作指示的灯光单调不够美观。

发明内容

[0006] 为克服传统探测器随时间发生性能漂移、易受环境光变化影响的缺点,本发明目的在于提供一种稳定性好、抗环境光变化的具自调节功能的人体红外探测器。

[0007] 本发明的目的是通过以下技术措施实现的,一种具自调节功能的人体红外探测器,包括一主控单元,通过一信号放大电路单元电连接主控单元的一被动红外传感器电路单元,电连接主控单元的一多色发光电路单元和一信号输出电路单元,以及供电的电源电路单元;所述多色发光电路单元包括多个分别电连接主控单元上的不同颜色的发光元件,所述被动红外传感器电路单元包括一被动红外传感器,所述被动红外传感器设置在能接收到全部发光元件的直射光或漫反射光的位置。

[0008] 作为一种优选方式,所述主控单元包括一具有数模转换功能的微处理器芯片。

[0009] 作为一种优选方式,所述不同颜色的发光元件为一红色发光二极管、一绿色发光二极管和一蓝色发光二极管。

[0010] 作为一种优选方式,所述主控单元还包括一热敏电阻。

[0011] 具体的,所述主控单元由具有数模转换功能的微处理器芯片 U3、电阻 R11、热敏电阻 RX1、电阻 R15、跳线 JP1、电阻 R20、电容 C13、电容 C14、防拆开关 S1 和电阻 R21 组成;被动红外传感器电路单元由电阻 R2、电容 C9、被动红外传感器 PIR1、电容 C10 和电阻 R3 组成;所述传感器信号放大电路由内部包含运放 U2A 与运放 U2B 的双运放芯片,外围元件电阻 R4、电阻 R5、电阻 R6、电容 C5、电容 C11、电容 C4、电阻 R7、电阻 R8、电阻 R9、电阻 R10、电阻 R1、电容 C12、电容 C6、电容 C7 和电容 C8 组成;所述多色发光电路由开关 JP2、红色发光二极管 D1、分压电阻 R16、绿色发光二极管 D2、分压电阻 R17、蓝色发光二极管 D3 和分压电阻 R18 组成;所述信号输出电路由电阻 R19、输出接口 X1-3 组成;所述电源电路单元由电源接

口 X1-1、电源接口 X1-2、电容 C1、电容 C2、电容 C3 和稳压芯片 U1 组成。

[0012] 更具体的,所述被动红外传感器 PIR1 采用尼塞拉的编号为 RE200B 的三端被动红外传感器。

[0013] 本发明还公开了具自调节功能的人体红外探测器的工作方法,包括以下步骤:

[0014] (1)、人体探测:固定安装后接通外电源,电源电路单元开始供电,当有人体进入到被动红外传感器的探测区域,被动红外传感器探测到移动人体辐射的红外线,输出电信号并传输到信号放大电路单元将信号放大,放大后的信号输出到主控单元,主控单元对接收到的电信号进行模数转换,通过与预设或调整好的门限与脉冲时序进行比对,发出动作指令,由信号输出电路单元输出,用于控制继电器或无线的发射电路;

[0015] (2)、自动调节:当完成一次或预定的多次人体探测后,主控单元分别通过占空比不断变化的脉冲电流控制不同颜色的发光元件的发光和亮度,不同颜色的发光元件发出的光被混合在一起变成了各种颜色的光,这些光直射或漫反射在了被动红外传感器上,被动红外传感器感应到的电信号,传输到信号放大电路单元将信号放大,再输出到主控单元,由于不同颜色的发光元件主动发射的光谱以及强度是主控单元中的程序预设的,由主控单元计算出被动红外传感器与信号放大电路单元存在的离散性与误差以及在不同照度的光环境下失误几率,实时获取被动红外传感器的探测状态,随即予以自动调整探测触发门限与时序,进行自动补偿自动校准,令系统处于最佳探测状态;当有人体进入到被动红外传感器的探测区域,再次执行步骤(1)。

[0016] 作为一种优选方式,所述步骤(2)自检中进行自动补偿自动校准时热敏电阻对环境温度进行检测为主控单元提供温度参数。

[0017] 本发明可安装在墙壁上或吸顶安装在天花板上;采用多色发光电路在每次产品动作后在产品壳体内漫反射被动红外传感器,在产品壳体内漫反射时通过主控单元分别控制多个不同颜色的发光元件连续变化亮度,混合出多种不同颜色并且强度也是连续变化的彩色光线,多种光谱在产品壳体内漫反射下,被动红外传感器会产生不同的信号送给传感器信号放大电路,再传送给主控单元将模拟量转换为数据,由于多色发光电路单元主动发射的光谱以及强度是预设的已知的,由此推算出被动红外传感器与传感器信号放大电路存在的离散性与误差以及在不同照度的光环境下可能的失误几率,随即予以自动补偿自动校准自动调整探测触发门限与时序,使探测器的品质得到大幅提升,不同颜色的发光元件在产品内同时担当工作状态指示灯的作用,用户也可以在探测器每次动作时看到漂亮的彩光,并且可以一目了然区分出采用了新技术的探测器。

附图说明

[0018] 图1为本发明的电路方框图;

[0019] 图2为本发明实施的电路原理图。

具体实施方式

[0020] 下面结合实施例并对照附图对本发明作进一步详细说明。

[0021] 如图1、图2,一种具自调节功能的人体红外探测器,包括一主控单元4,通过一信号放大电路单元2电连接主控单元4的一被动红外传感器电路单元1,电连接主控单元4的

一多色发光电路单元 3 和一信号输出电路单元 5, 以及供电的电源电路单元 6。

[0022] 所述主控单元 4 由具有数模转换功能的微处理器芯片 U3、电阻 R11、热敏电阻 RX1、电阻 R15、跳线 JP1、电阻 R20、电容 C13、电容 C14、防拆开关 S1 和电阻 R21 组成; 被动红外传感器电路单元 1 由电阻 R2、电容 C9、被动红外传感器 PIR1、电容 C10 和电阻 R3 组成, 在市面上销售的多种型号的被动红外传感器一般均可以采用, 本实施例中, PIR1 采用尼塞拉的编号为 RE200B 的三端被动红外传感器; 所述传感器信号放大电路 2 由内部包含运放 U2A 与运放 U2B 的双运放芯片, 外围元件电阻 R4、电阻 R5、电阻 R6、电容 C5、电容 C11、电容 C4、电阻 R7、电阻 R8、电阻 R9、电阻 R10、电阻 R1、电容 C12、电容 C6、电容 C7 和电容 C8 组成, 在市面上销售的多种型号的通用双运放芯片一般均可以采用, 本实施例中, 内部包含运放 U2A 与运放 U2B 的双运放芯片为深圳镊力安防公司的 SN308N; 所述多色发光电路 3 由开关 JP2、红色发光二极管 D1、分压电阻 R16、绿色发光二极管 D2、分压电阻 R17、蓝色发光二极管 D3 和分压电阻 R18 组成; 所述信号输出电路 5 由电阻 R19、输出接口 X1-3 组成; 所述电源电路单元 6 由电源接口 X1-1、电源接口 X1-2、电容 C1、电容 C2、电容 C3 和稳压芯片 U1 组成, 稳压芯片 U1 就是普通市售的三端稳压集成电路, 电源接口 X1-1 接电源正极、X1-2 接电源负极, 可以外接有线电源也可以接电池; 其中红色发光二极管 D1、绿色发光二极管 D2、蓝色发光二极管 D3 和被动红外传感器 PIR1 安装在同一空间内, 且红色发光二极管 D1、绿色发光二极管 D2 和蓝色发光二极管 D3 发出的光线通过壳体的漫反射后能被被动红外传感器 PIR1 接收到。

[0023] 上述具自调节功能的人体红外探测器的工作方法, 包括以下步骤:

[0024] (1)、自检: 本发明可安装在墙壁上, 接通产品电源, 电源电路单元 6 开始供电, 整个产品的电路进行自检, 为产品进入探测状态做好了准备;

[0025] (2)、第一次人体探测: 当有人进入到本发明的探测区域, PIR1 探测到移动人体辐射的红外线, PIR1 第 2 脚输出电信号, 通过电阻 R5 传输到传感器信号放大电路, 双运放芯片 U2A 和 U2B、电阻 R4、电阻 R5、电阻 R6、电容 C5、电容 C11、电容 C4、电阻 R7、电阻 R8、电阻 R9、电阻 R10、电阻 R1、电容 C12、电容 C6、电容 C7 和电容 C8 组成了典型的低频信号放大电路, 将信号放大, 由双运放芯片中的 U2A 单元的第一脚输出到微处理器芯片 U3 的第 2 脚, 微处理器芯片 U3 对接收到的电信号进行模数转换, 通过对预定的门限与脉冲时序进行比对, 发出动作指令, 由 U3 的第 9 脚输出动作信号, 由电阻 R19 通过输出接口 X1-3 输出, 用于控制继电器或无线的发射电路;

[0026] (3)、自动调节: 当完成一次人体探测后, 微处理器芯片 U3 通过电阻 R16、R17、R18 分别控制多色发光元件 DX1 中的红色发光二极管 D1, 绿色发光二极管 D2, 蓝色发光二极管 D3, 开关 JP2 连通, 这三个发光二极管各自得到占空比不断变化的脉冲电流, 红色发光二极管 D1, 绿色发光二极管 D2, 蓝色发光二极管 D3 的发光亮度分别连续不停的变化, 由于它们被封装在一起, 发出的光被混合在一起变成了各种颜色的光, 这些光在产品壳体内漫反射在了被动红外传感器 PIR1 上, PIR1 第 2 脚输出感应到的电信号, 通过电阻 R5 传输到传感器信号放大电路, 双运放芯片 U2A 和 U2B、电阻 R4、电阻 R5、电阻 R6、电容 C5、电容 C11、电容 C4、电阻 R7、电阻 R8、电阻 R9、电阻 R10、电阻 R1、电容 C12、电容 C6、电容 C7 和电容 C8 组成了典型的低频信号放大电路, 将信号放大, 由双运放芯片中的 U2A 单元的第一脚输出到微处理器芯片 U3 的第 2 脚, 由于 DX1 主动发射的光谱以及强度是微处理器芯片 U3 中的程序

预设的,由此计算出被动红外传感器与传感器信号放大电路存在的离散性与误差以及在不同照度的光环境下可能的失误几率,实时获取被动红外传感器的探测状态,随即予以自动调整探测触发门限与时序,进行自动补偿自动校准,电阻 R11 与热敏电阻 RX1 组成环境温度检测电路为微处理器芯片 U3 提供温度参数,以确保探测门限的最佳设定,为产品进入最佳探测状态做好了准备;

[0027] (4)、以后次的人体探测:当再次有人进入到本发明的探测区域,PIR1 探测到移动人体辐射的红外线,PIR1 第 2 脚输出电信号,通过电阻 R5 传输到传感器信号放大电路,双运放芯片 U2A 和 U2B、电阻 R4、电阻 R5、电阻 R6、电容 C5、电容 C11、电容 C4、电阻 R7、电阻 R8、电阻 R9、电阻 R10、电阻 R1、电容 C12、电容 C6、电容 C7 和电容 C8 组成了典型的低频信号放大电路,将信号放大,由双运放芯片中的 U2A 单元的第一脚输出到微处理器芯片 U3 的第 2 脚,微处理器芯片 U3 对接收到的电信号进行模数转换,通过对最新设定的门限与脉冲时序进行比对,发出动作指令,由 U3 的第 9 脚输出动作信号,由电阻 R19 通过输出接口 X1-3 输出,用于控制继电器或无线的发射电路;并再次进入 (3) 自动调节步骤。

[0028] 在本发明探测到人体入侵时,DX1 的光线即通过本发明的视窗透射出来,用户可以看到;

[0029] 跳线 JP1 用于设置 U3 的脉冲计数,防拆开关 S1 用于检测产品是否被拆开。

[0030] 以上是对本发明具自调节功能的人体红外探测器及工作方法进行了阐述,用于帮助理解本发明,但本发明的实施方式并不受上述实施例的限制,任何未背离本发明原理下所作的改变、修饰、替代、组合、简化,均应为等效的置换方式,都包含在本发明的保护范围之内。

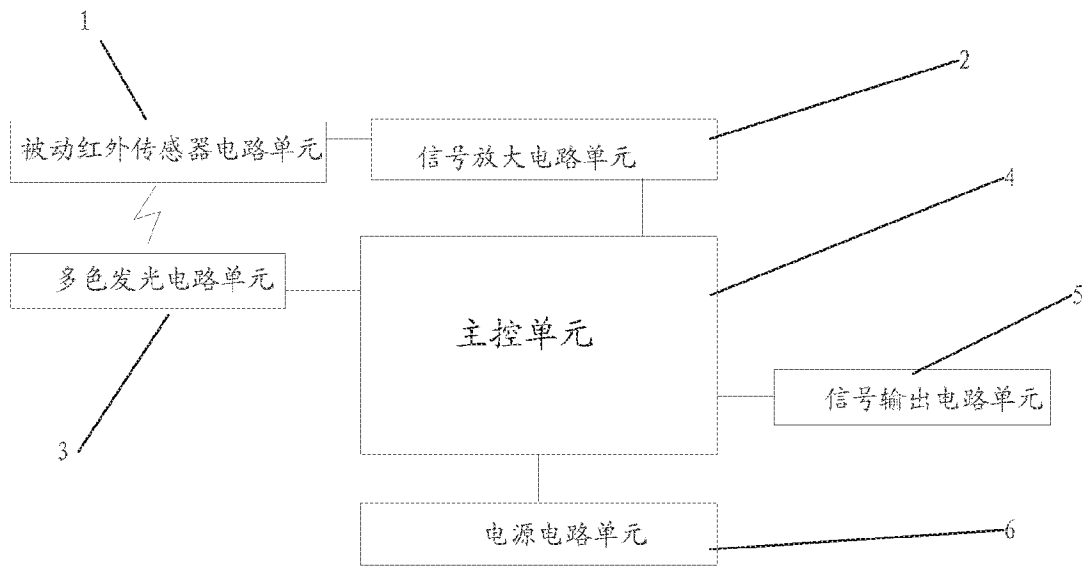


图 1

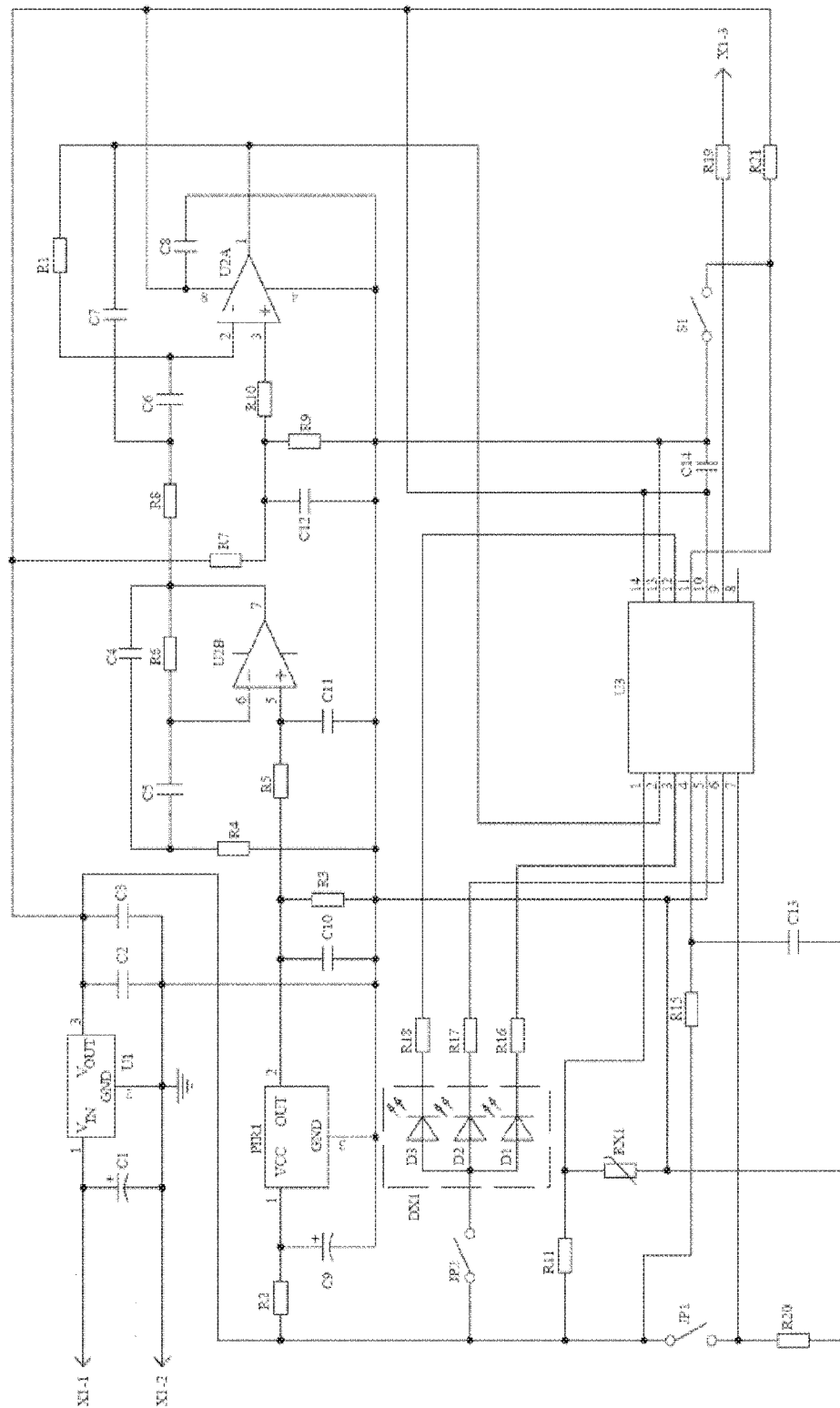


图 2



Espacenet

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Trash can with clutching and liner retention features

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Abstract of CN103303618 (A)

A trash can assembly comprising a body component, a lid mounted relative to the body component and configured to move between open and closed positions, the lid having lid driving mechanism components, such as flanges, a power operated driving mechanism comprising a drive motor coupled with a shaft, and a clutch mechanism engageable with the lid driving mechanism components, the clutch mechanism configured to receive torque from the drive motor via the shaft and to transmit the torque to the lid driving

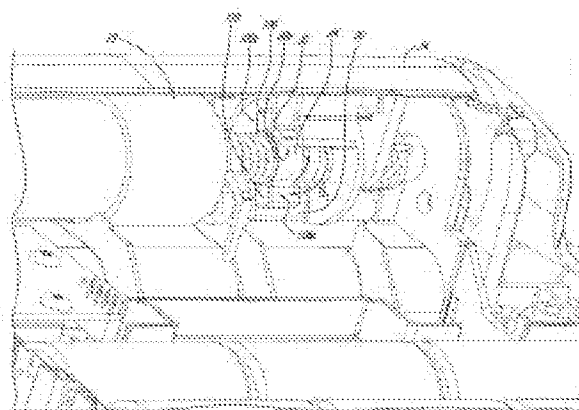


FIG. 13

mechanism components to move the lid between the open and closed positions; wherein the lid driving mechanism components and the clutch mechanism are configured to allow a user to manually move the lid between the open and closed positions substantially without applying torque to at least one of: the motor, the shaft, and the clutch mechanism.



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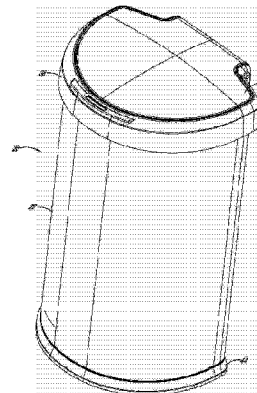
权利要求书3页 说明书13页 附图13页

(54) 发明名称

具有离合和衬套保持部件的垃圾桶

(57) 摘要

提供了垃圾桶组件（例如配置用来接收废物、可循环材料等的容器）和相关方法的各个实施方案。垃圾桶组件的一些实施方案包括主体部件和配置为在打开位置和关闭位置之间运动的盖子。在一些变型中，盖子可以通过动力操作驱动机构（例如电机和 / 或其他传动部件）而在打开和关闭位置之间运动。在一些实施方案中，垃圾桶组件包括离合机构，用来方便盖子的手动操作，同时阻止或防止对电机和 / 或其他传动部件的损坏。



1. 一种垃圾桶组件,包括:

配置为接收一部分可拆卸衬套的主体部件;

边缘构件,其与所述主体部件枢轴连接并且配置为在打开和关闭位置之间运动,从而在所述边缘构件处于所述关闭位置并且所述可拆卸衬套的上部设置在所述主体部件的上边缘上面时,所述边缘构件配置为接合所述主体部件的上边缘以将所述可拆卸衬套的上部固定在所述边缘构件和所述主体部件的上边缘之间;以及

盖子,其与所述主体部件枢轴连接,并且配置为在第一位置和第二位置之间运动,所述盖子的周边在所述边缘部件处于闭合位置并且所述盖子处于第一位置时通常容纳在所述边缘构件中,所述盖子的周边在所述边缘构件处于闭合位置并且所述盖子处于第二位置时大体上设置在所述边缘构件外侧。

2. 如权利要求1所述的垃圾桶组件,其中所述边缘构件还包括保持机构,其配置为将所述边缘构件保持在打开位置,由此使得用户能够将所述可拆卸衬套安装在所述垃圾桶组件中。

3. 如权利要求2所述的垃圾桶组件,其中所述保持机构包括第一凸轮结构和第二凸轮结构,所述第一凸轮结构配置为在所述边缘构件朝着所述打开位置运动时容纳在所述第二凸轮结构的凹槽中。

4. 如权利要求1所述的垃圾桶组件,其还包括动力操作驱动机构,其配置为使得所述盖子在所述第一和第二位置之间运动。

5. 如权利要求4所述的垃圾桶组件,其中所述动力操作驱动机构由传感器促动。

6. 如权利要求5所述的垃圾桶组件,其中所述动力操作驱动机构和所述传感器中的至少一个在所述边缘构件处于所述打开位置时禁用。

7. 一种垃圾桶组件,包括:

主体部件;

盖子,其相对于所述主体部件安装并且配置为在打开和关闭位置之间运动,所述盖子具有盖子驱动机构;

动力操作驱动机构,包括与轴连接的电机;以及

可与所述盖子驱动机构接合的离合机构,所述离合机构配置为通过轴接收来自所述电机的力矩,并且将所述力矩传递给所述盖子驱动机构,以使得所述盖子在打开和关闭位置之间运动,

其中所述盖子驱动机构和所述离合机构配置为使得用户能够在基本不用向所述电机、所述轴和所述离合机构中的至少一个施加力矩的情况下手动地使得所述盖子在所述打开和关闭位置之间运动。

8. 如权利要求7所述的垃圾桶组件,其中所述盖子驱动机构安装在所述盖子的底面上,并且配置为与所述离合机构邻接,从而在操作所述驱动机构时,所述离合机构配置为使得所述盖子在所述打开和关闭位置之间运动。

9. 如权利要求8所述的垃圾桶组件,其中所述盖子驱动机构包括径向向内延伸的第一和第二凸缘,它们配置为分别与所述离合机构的第一和第二力矩传递构件邻接,从而离合机构的转动使得所述第一和第二凸缘转动,并且所述盖子在所述打开和关闭位置之间运动。

10. 如权利要求 9 所述的垃圾桶组件,其中所述第一和第二凸缘设置在所述盖子上,从而在所述第一和第二凸缘之间限定有周向空间,所述第一和第二力矩传递构件配置为设置在所述周向空间内。

11. 如权利要求 10 所述的垃圾桶组件,其中所述第一和第二力矩传递构件包括从所述离合机构的中央主体径向向外延伸的第一和第二臂,其中在所述第一和第二凸缘之间设有周向空间,所述第一和第二臂中的至少一个设置在所述周向空间内。

12. 如权利要求 11 所述的垃圾桶组件,其中所述第一和第二臂中的至少一个具有第一表面和第二表面,所述第一表面配置为与所述第一凸缘邻接,并且所述第二表面配置为与所述第二凸缘邻接。

13. 如权利要求 12 所述的垃圾桶组件,其中当所述第一表面与所述第一凸缘邻接时,在所述第二臂的第二表面和所述第二凸缘之间限定有第一周向距离,所述第一周向距离大于或等于所述盖子在所述关闭和打开位置之间的转动量。

14. 一种垃圾桶组件,包括:

主体部件;

盖子,其相对于所述主体部件安装并且配置为在打开和关闭位置之间运动;

驱动机构,可操作用来使得盖子在所述打开和关闭位置之间运动,所述驱动机构包括电机、轴和端部构件,所述电机配置为使得所述轴转动,所述轴配置为使得所述端部构件转动;以及

离合机构,其可与所述盖子可转动地接合,并且用来接收来自所述端部构件的力矩,以便使得所述盖子在所述打开和关闭位置之间运动,所述离合机构配置为在所述盖子在打开和关闭位置之间运动时在大体上不用所述驱动机构操作的情况下相对于所述端部构件运动。

15. 如权利要求 14 所述的垃圾桶组件,其中所述驱动机构包括偏压构件,其配置为将所述离合机构偏压成与所述端部构件接合,从而来自所述电机的力矩通过在所述端部构件和所述离合机构之间的接合传递给所述离合机构。

16. 如权利要求 15 所述的垃圾桶组件,其中所述端部构件与所述轴刚性连接,从而大体上防止了所述端部构件相对于所述轴转动。

17. 如权利要求 16 所述的垃圾桶组件,其中:

在所述盖子在所述打开和关闭位置之间在大体上不用所述驱动机构操作的情况下运动时,所述离合机构配置为沿着所述轴的一部分纵向长度朝着所述电机平移并且相对于所述端部构件转动;并且

在所述盖子的这种运动中止时,所述偏压构件的偏压使得所述离合机构朝着所述端部构件平移并且与之接合。

18. 如权利要求 16 所述的垃圾桶组件,其中所述离合机构和所述端部构件包括相应的凸轮面,其配置为使得所述离合机构能够相对于所述端部构件平移和转动。

19. 如权利要求 18 所述的垃圾桶组件,其中所述离合机构包括第一倾斜凸轮面,并且所述端部构件包括第二倾斜凸轮面,所述第一和第二倾斜凸轮面配置为使得所述离合机构和所述端部构件之间能够进行配合接合。

20. 如权利要求 19 所述的垃圾桶组件,其中在所述盖子在不用所述驱动机构的操作

的情况下在所述打开位置和关闭位置之间运动时,所述第一和第二倾斜凸轮面相对于彼此滑动。

具有离合和衬套保持部件的垃圾桶

[0001] 相关申请的交叉参考

[0002] 本申请依据 35U. S. C. § 119(e) 要求于 2012 年 3 月 9 日提交的美国临时专利申请 No. 61/609233 的优先权权益,其全文通过引用而结合到本文中。

技术领域

[0003] 一些实施方案涉及传动装置,例如用于操纵容器盖子或门的机构。

背景技术

[0004] 具有用于给予部件(例如盖子或门)传递动力的机构的容器和其它装置以许多不同的设置使用。例如,在室内和商业设置中,垃圾桶和其它装置通常具有用于保护或防止容器内容物泄漏的盖子。一些垃圾桶可以包括用于防止臭味逸出的盖子或门,并且将垃圾藏在容器内而不被看到。另外,垃圾桶的盖子能够帮助防止污染物从容器中泄漏出来。

[0005] 一些市售的垃圾桶具有电动或手动操作的盖子。这些垃圾桶通常包括用来驱动齿轮组件的电机,该齿轮组件反过来驱动盖子打开和关闭。这些垃圾桶可以包括设置在盖子上或其附近的传感器。这种传感器可以配置来检测运动,例如在传感器附近晃动的用户的手,以此作为用于打开盖子的信号。在激活这种传感器时,在垃圾容器内的电机将盖子或门打开,因此使得用户能够将物品放入到容器中。之后,盖子能够自动地关闭。

[0006] 但是,某些传统的电动或手动操作的盖子存在一些问题。例如,在容器或桶内的垃圾堆积的高度大于盖子本身的高度的情况下,具有电动操作盖子的当前垃圾桶的用户会遇到问题。如果桶内的垃圾或其它材料高于盖子自身的高度,则盖子将不能完全闭合。这能够使得电机或电池磨损、持续运转和 / 或最终失效。它还能够迫使用户重置控制器、清除垃圾或者手动按压垃圾直至盖子能够关闭。

[0007] 容器衬套例如垃圾袋的展开、使用和去除存在许多其它问题。共同的问题涉及将垃圾袋保持悬挂在垃圾桶的顶部上,并且垃圾袋的口部打开。例如,用户通常需要将垃圾袋的顶缘折叠在垃圾桶的顶缘或其内部衬套上,以将垃圾袋的口部在垃圾桶或内部衬套的顶部处保持打开。但是,投放到垃圾袋中的废弃材料的重量会使得垃圾袋从垃圾桶的口部滑脱并且落入到垃圾桶的内部中。这会导致垃圾袋内的废弃材料出现不期望有的溢出和 / 或导致必须到达垃圾桶内部才能取得垃圾袋并且将它重新定位到垃圾桶上的不方便。

[0008] 另外,在用户手动打开和关闭配置为给盖子或门传递动力的垃圾容器的盖子或门时,会存在问题。不论是故意的或是意外的,直接手动打开或关闭盖子(例如不是通过电机或其它传动装置例如脚踏板打开和 / 或关闭)的动作例如会使电动操作垃圾容器的零部件(例如电机或齿轮)磨损、折断或导致故障。例如,在手动操作盖子时,与盖子连接的某些齿轮被迫运动(例如,转动和 / 或移动)。但是,因为电机在没有操作时相对难以转动,所以电机会妨碍一个或多个齿轮运动。因此,在手动操作盖子时,在迫使盖子运动的齿轮和阻止电机运动的齿轮之间会产生应力。这种应力会导致容器的齿轮、电机、盖子或容器其它部件损坏。例如,这种应力会折断齿轮的一个或多个齿。对齿轮造成的损坏例如会导致对盖子运

动的控制减弱,产生噪声,并且甚至阻止或防止电机操作盖子。

[0009] 发明概述

[0010] 这里提供了垃圾桶组件(例如配置为接收废物、可回收材料等)和相关方法的多种实施方案。在一些实施方案中,垃圾桶组件包括主体部件,例如壳体或外壳。在一些实施方案中,主体部件由金属例如不锈钢制成。主体部件可以配置为接收一部分可拆卸衬套,例如垃圾袋、箱袋、箱衬套等。

[0011] 垃圾桶组件的各个实施方案包括边缘构件,例如塑料或金属边缘、边界区域等。边缘构件可以枢轴结合(例如,可旋转地、铰链地等等)至主体。边缘构件可以配置为在闭合位置和打开位置之间运动。在边缘构件处于闭合位置并且可拆卸衬套的上部(例如,边缘、脊部、轮缘等)设置在主体部件的上边缘(例如唇部、轮缘等)上时,边缘构件可以配置为接合主体部件的上边缘,以将可拆卸衬套的上部固定(例如挤压、抓持等)在边缘构件和主体构件的上边缘之间。

[0012] 在一些实施方案中,垃圾桶组件包括盖子,例如封盖、顶盖、闭合构件等。盖子能够与主体部件枢轴连接,并且配置为在第一位置(例如闭合或关闭)和第二位置(例如打开)之间运动。在一些实施方式中,盖子的周边(例如边缘和/或径向外侧)在边缘构件处于闭合位置中并且盖子处于第一位置中时通常能够容纳在边缘构件中,从而盖子的周边在边缘构件处于闭合位置中并且盖子处于第二位置中时大体上设置在边缘构件外侧。在一些实施方案中,盖子由与主体部件相同的材料制成。在一些实施方案中,盖子由与边缘构件相同的材料制成。

[0013] 在一些实施方案中,边缘构件包括从边缘构件的顶面大体上向下(例如边缘构件顶面的大致垂直方向,大体上朝着垃圾桶组件的底部,或其它方向)延伸的壁。在一些变型中,边缘构件包括设置在壁的内侧表面上的衬套保持部件(例如一个或多个钩子、翼部、棘爪、搭扣、磁铁等)。在一些实施方案中,衬套保持构件包括设置在壁的内表面上向内延伸(例如径向向内,沿着大体上朝着主体的方向,或者其它方向)的翼片(flap)。向内延伸的翼片可以配置为接收主体部件的上边缘的一部分。例如,在一些实施方案中,主体部件的上边缘包括环形唇部,并且向内延伸的翼片包括配置为将一部分可拆卸衬套固定在翼片和环形唇部之间的接合元件(例如凹槽、孔、通道、凸起等)。

[0014] 在一些实施方案中,边缘构件包括保持机构,例如门锁、棘爪或其它固定和/或保持装置。保持机构可以配置为将边缘构件保持在打开位置中,由此使得用户能够将可拆卸衬套安装在垃圾桶组件中。在一些实施方案中,保持机构包括第一凸轮结构(例如臂、轮、轴、气缸、齿轮等)和第二凸轮结构。在边缘构件朝着打开位置运动(例如转动、滑动、平移等)时,第一凸轮结构可以配置为容纳在第二凸轮结构的保持部件(例如凹槽、通道等)中。

[0015] 在一些实施方案中,垃圾桶组件包括动力操作驱动机构,例如电机和轴。动力操作驱动机构可以进行配置(例如具有连杆或齿轮),使得盖子在第一和第二位置之间运动。在一些实施方式中,动力操作驱动机构由传感器(例如红外传感器、邻近传感器、超声波传感器等)促动。例如,来自传感器的信号可以提供给控制器,该控制器可以配置为调节动力操作驱动机构的操作,以根据信号使得盖子在第一和第二位置之间运动。在一些变型中,传感器配置为感应(例如,检测、监测、测量等)在垃圾桶组件附近的物体或用户的存在和/或

不存在。例如,传感器可以感测出用户大体上在垃圾桶组件前面和/或上方的存在,并且因此针对盖子将要打开发出信号。传感器的一些实施方式配置为感应相对于垃圾桶组件的空间体积中(例如在位于垃圾桶组件上方的大体上为锥形的空间体积内)物体或用户的存在和/或不存在。在一些实施方案中,动力操作驱动机构和传感器中的至少一个在边缘构件处于打开位置时禁用(例如通常是断电、关闭等)。某些这种实施方式例如可以降低错误正读数的可能性和/或能够节能。

[0016] 根据一些实施方式,垃圾桶组件包括主体部件。垃圾桶组件具有相对于主体部件安装的盖子。盖子可以配置为在打开和关闭位置之间运动。在一些变型中,盖子具有盖子驱动机构。垃圾桶组件的一些实施方案包括电动操作驱动机构,它包括与轴连接(例如直接或间接连接)的电机。在各个实施方案中,电机进行供电(例如通过交流电、直流电或其它方式)。在一些实施方式中,电机配置为从一个或多个电池中接收电能。在一些实施方式中,太阳能电池板给垃圾桶的至少一些部件(例如电机)供能。

[0017] 垃圾桶组件的一些实施方式包括离合机构,例如可选择接合的传动和/或力矩传递构件。在一些变型中,离合机构能够与盖子驱动机构接合(例如,抵靠在其上、可与之固定、可与之连接或其它方式)。离合机构可以配置为从电机例如借助轴接收力矩,并且将该力矩传递给盖子驱动机构,以使得盖子在打开和关闭位置之间运动。盖子驱动机构和离合构件可以配置为使得用户能够以手动的方式使得盖子在打开和关闭位置之间运动(例如推、拉、转动、平移、抬起等),而基本上不用向用电机、轴和离合机构中的至少一个施加力。在一些实施方案中,盖子驱动机构和离合构件可以配置为使得用户能够以手动的方式使得盖子在打开和关闭位置之间运动,而基本上不用向电机、轴和离合机构中的至少两个(例如电机和轴、轴和离合器和/或电机和离合器)施加力(例如,力矩)。在一些实施方式中,盖子驱动机构和离合构件可以配置为使得用户能够以手动的方式使得盖子在打开和关闭位置之间运动,而基本上不用向电机、轴和离合机构施加力(例如力矩)。

[0018] 在一些实施方案中,盖子驱动机构安装在盖子的底面上,例如底侧、背面和/或大体上朝着垃圾桶组件的底部的表面。盖子驱动机构可以配置为与离合机构直接或间接邻接(例如,接触、触碰等)。在一些实施方案中,在离合机构操作(例如通过轴和/或电机转动)时,这种邻接会导致盖子驱动机构运动(例如转动),由此使得盖子在打开和关闭位置之间运动。

[0019] 根据一些实施方式,盖子驱动机构包括第一和第二凸缘,例如翼片、翼部、凸起等。这些凸缘可以配置为分别与离合机构的第一和第二力矩传递构件(例如臂、轴等)邻接。在一些变型中,第一和第二凸缘中的至少一个径向向内延伸(例如大体上朝着主体、大体上朝着垃圾桶组件的径向中心或其它方向)。根据一些变型,离合机构的转动导致第一和第二凸缘转动,这反过来导致盖子打开和关闭位置之间运动(例如转动)。在一些实施方案中,第一和第二凸缘设置在盖子上。例如,第一和第二凸缘可以与盖子模制或以其它方式成型,或者与盖子连接(例如通过焊接或粘接剂)。

[0020] 一些实施方式包括在第一和第二凸缘之间的至少一个周向空间(例如,间隙或凹槽)。在一些实施方案中,第一和第二力矩传递构件中的至少一个配置为设置在至少一个周向空间内。一些实施方案包括在第一和第二凸缘之间的第一和第二周向空间,第一力矩传递构件设置在第一周向空间中,并且第二力矩传递构件设置在第二周向空间中。

[0021] 在一些实施方案中,第一和第二力矩传递构件具有从离合机构的中央主体延伸的至少一个臂。例如,一些实施方案包括从中央主体径向向外延伸的第一和第二臂。在一些变型中,至少一个臂具有第一表面和第二表面。第一表面可以配置为与第一凸缘邻接,并且第二表面可以配置为与第二凸缘邻接。在一些实施方式中,在第一表面与第一凸缘邻接时,在第二表面(例如非邻接表面)和第二凸缘之间限定了第一周向距离。在一些实施方案中,第一周向距离大于或等于盖子在打开和关闭位置之间的转动量。例如,在一些变型中,盖子关闭和打开位置之间的转动可以为至少大约 80° ,并且周向距离可以大于或等于大约 80° 。在一些实施方案中,周向距离大于或等于盖子在关闭和打开位置之间的转动量,这便于用户不用向臂施加力就能够手动地(例如不用操作驱动机构等)打开和/或关闭盖子。

[0022] 在一些实施方案中,垃圾桶组件包括一个或多个盖子位置感测元件,例如标志构件、邻近传感器、中断式传感器、电位计等。在一些实施方式中,盖子位置感应元件与配置为执行一个或多个算法的控制器(例如处理器或其它电路)通信连接(例如电连接等)。控制器可以配置为例如根据来自盖子位置感应元件的信号确定盖子是否处于打开或关闭位置。

[0023] 根据一些实施方案,垃圾桶组件包括主体部件和相对于主体部件安装并且配置为在打开和关闭位置之间运动的盖子。垃圾桶组件可以包括可操作用来使得盖子在打开和关闭位置之间运动的驱动机构。驱动机构的一些实施方案可以包括电机、轴和端部构件。电机可以配置为使得轴转动,并且轴可以配置为使得端部构件转动。在一些实施方案中,端部构件通常与轴刚性连接(例如,固定或紧固),从而大体上防止了端部构件相对于轴转动。

[0024] 在一些变型中,驱动机构包括离合机构。离合机构可以与盖子可转动接合(例如能够接合和脱开)。驱动机构适于接收来自端部构件的力矩,以使得盖子在打开和关闭位置之间运动。在盖子在打开和关闭位置之间运动时,离合机构可以配置为在不用驱动机构操作的情况下(电机和/或轴相对于主体大体上没有转动运动)相对于端部构件运动(例如转动、平移、滑动等)。

[0025] 在一些实施方案中,驱动机构包括偏压构件,例如弹簧、弹性构件等。偏压构件可以配置为将离合机构偏压(向它施加力)成与端部构件接合(例如接触、邻接、固定等)。在一些实施方式中,偏压构件的偏压可以便于来自电机的力矩通过在端部构件和离合机构之间的接合传递给离合机构。

[0026] 在一些实施方案中,离合机构配置为相对于端部构件和/或轴运动(例如平移和/或转动)。例如,在一些实施方案中,当盖子在大体上不用驱动机构操作的情况下(例如在手动(例如用手)打开或关闭盖子时)在打开和关闭位置之间运动时,离合机构可以相对于端部构件和/或轴运动。在一些实施方案中,在离合机构相对于端部构件和/或轴运动时,离合机构沿着轴的纵向长度的一部分朝着电机平移和/或相对于端部构件转动。在一些实施方案中,在离合机构相对于端部构件和/或轴的运动中止时,偏压构件配置为使得离合机构朝着端部构件运动(例如平移和/或转动)和/或与之接合。

[0027] 在一些实施方案中,离合机构和端部构件包括相应的凸轮表面。在一些实施方式中,相应的凸轮表面配置为使得离合机构能够相对于端部构件平移和转动。在一些实施方案中,离合机构包括第一倾斜凸轮面,并且端部构件包括第二倾斜凸轮面。第一和第二倾斜凸轮面可以配置为使得离合机构和端部构件能够进行配合接合。在一些实施方案中,当盖

子在大体上不用驱动机构操作的情况下在打开和关闭位置之间运动时,第一和第二倾斜凸轮面相对于彼此滑动(例如平移和/或转动)。

附图说明

[0028] 下面参照一些实施方案的附图对在这里所披露的垃圾桶的上述和其它特征进行说明。所示的实施方案用来例举说明,但不是对本发明进行限定。这些附图包含有下面的附图:

[0029] 图 1 为封闭容器的实施方案的前上部左侧透视图,其中盖子和边缘构件处于闭合位置。

[0030] 图 2 为在图 1 中所示的容器的放大前上部左侧透视图,其中盖子处于打开位置中,边缘构件处于闭合位置。

[0031] 图 3 为在图 1 中所示的容器的后上部右侧透视图。

[0032] 图 4 为封闭容器的实施方案的分解前上部左侧透视图,其中盖子是闭合的。

[0033] 图 5 为在图 1 中所示的容器的放大后部透视图,其中后盖拆除。

[0034] 图 6 为在图 1 中所示的容器的放大后上部左侧透视图,其中盖子和边缘构件移除以示出提升机构。

[0035] 图 7 为图 1 的边缘构件的一部分的放大仰视图。

[0036] 图 8 为图 1 的容器的放大局部剖视图。

[0037] 图 9 为在图 1 中所示的容器的放大局部后部透视图,其中后盖拆除。

[0038] 图 10 为在图 1 中所示的容器的放大后上部左侧透视图,其中盖子和边缘构件处于打开位置。

[0039] 图 11 为图 1 的盖子的放大前下部左侧透视图。

[0040] 图 12 为在图 6 中所示的提升机构的电机和齿轮驱动机构的放大透视图。

[0041] 图 13 为在图 1 中所示的容器的放大局部后部透视图,其中后盖拆除。

具体实施方式

[0042] 在垃圾桶的上下文中披露了用于打开和关闭容器(例如垃圾桶或其它装置)的盖子或门的传动系统的各个实施方案。本发明在垃圾桶的上下文中根据特定功用描述了特定实施方式。但是,本发明的主题可以用于许多其它用途,例如包括商业垃圾桶、门、窗户、安全门和其它更大的门或盖子,以及用于更小型装置例如高精度计算机驱动装置等的门或盖子。其实施方案和/或部件可以在动力或手动操作的系统中实现。

[0043] 参照图 1-3,垃圾桶组件 20 可以包括主体或壳体部件 22、盖子 24 以及其它模块件或部件。垃圾桶组件 20 通常容易组装和维护。它可以具有最少的部件并且具有紧凑的设计。盖子 24 可以包括门部件,例如空气过滤器(未示出)。垃圾桶组件 20 可以配置为放在地板上,并且根据消费者需要、成本和制造简便性等而具有各种高度和宽度。在 2011 年 3 月 4 日提交的美国专利申请公开 No. 2011/0220647 和 2008 年 2 月 1 日提交的美国专利申请公开 No. 2009/0194532 中提供了能够与在这里所述的部件一起使用或替代这些部件的垃圾桶组件的其它细节和实施例,其全文通过引用而结合到本文中。

[0044] 垃圾桶组件 20 可以包括主体部件 22。在一些实施方案中,垃圾桶组件可以配置为

接收衬套或垃圾袋（未示出），这可以至少部分保持在主体部件 22 内。例如，主体部件 22 的上周边可以配置为支撑衬套的上周边，从而衬套通过其上周边悬挂和 / 或限制在主体部件 22 内。在一些实施方案中，垃圾桶组件 20 可以包括由主体部件 22 支撑的衬套支撑构件（未示出），并且配置为将衬套至少部分支撑在主体部件 22 的内部中。在一些实施方案中，主体部件 22 如此构成，从而衬套可以安装在主体部件 22 的下部上。

[0045] 参照图 4，在一些实施方案中，主体部件 22 包括上边缘 26。如所示的，主体部件 22 的上边缘 26 可以卷边(rolled)，包括环形唇部，或者包括从主体部件 22 的大体上垂直的壁向外延伸的特征。在一些实施方案中，上边缘 26 具有大体上圆形的横截面。也可以采用其它设计。

[0046] 主体部件 22 可以采用许多结构。图 1-3 的非限制性实施方案显示出主体部件 22 具有包括后壁和弯曲前壁 30 的大体上半圆形的结构。但是，也可以采用其它结构，例如矩形的。衬套或垃圾袋（未示出）可以具有与主体部件 22 相同或不同的总体结构。主体部件 22 可以由塑料、钢、不锈钢、铝或任意其它材料制成。

[0047] 如图 4 所示，垃圾桶组件 20 可以包括底部 44。底部 44 可以具有大体上环形弯曲的上裙部和用于放在表面（例如厨房地板）上的大体上平坦的下部。垃圾桶组件 20 的底部 44 可以与主体部件 22 一体、整体或分开制成。在一些实施方式中，底部 44 由塑料、金属（例如钢、不锈钢、铝等）或任意其它材料构成。在一些实施方案中，例如其中主体部件 22 为金属（例如不锈钢）的那些实施方案，底部 44 可以为塑料材料。在一些实施方案中，底部 44 包括突起 40，其向着周围环境开放或排放（即，通过底部 44 的基本上平坦的下部），这将在下面更详细地描述。如所示的，底部 44 的特定实施方案包括通过底部 44 的大体上平坦的下部的大体上设置在中央的通道。

[0048] 在一些实施方案中，底部 44 通过连接部件 46（例如钩子和 / 或紧固件如螺钉）与主体部件 22 连接或安装在其上。例如，在一些实施方案中，底部 44 包括钩状拉手（tab），其配置为与主体部件 22 的下边缘（例如卷边）连接。在一些实施方案中，钩状拉手例如通过搭扣连接接合主体部件 22 的下边缘。在一些实施方案中，底部 44 和主体部件 22 用粘接剂、焊接、钩子和类似的安装机构连接。

[0049] 在一些实施方案中，衬套插入件 100 与底部 44 连接或安装在其上。在一些实施方案中，衬套插入件 100 可以具有支撑构件（例如腿部 48），他们能够将衬套插入件 100 支撑和 / 或提升到底部 44 的内底部上方。在一些实施方案中，腿部 48 与底部 44 连接（例如采用紧固件、焊接等）。

[0050] 在一些实施方案中，衬套插入件 100 配置为大体上支撑着和 / 或抱着设置在垃圾桶组件 20 中的垃圾袋的下部。例如，如所示的，衬套插入件 100 可以大体上为凹形或碗状。在一些实施方案中，衬套插入件 100 配置为防止垃圾袋破裂或损坏并且保持溢出物。例如，衬套插入件 100 可以具有大体上平滑的表面，以降低垃圾袋由于与衬套插入件 100 接触而被撕裂或刺穿的可能性。甚至在不用采用沿着主体部件 22 的一部分或全部高度延伸的大体刚性衬套的垃圾桶组件 20 的实施方案中，衬套插入件 100 的几个实施方案因此能够降低损坏垃圾袋的的机率。

[0051] 在一些实施方式中，衬套插入件 100 与主体部件 22 的下部形成密封（例如，大体上防液体的）。在一些实施方案中，衬套插入件 100 可以包括开口 42，它们配置为与位于底

部 44 的内底面上的凸出 40 对应或相配合,由此使得开口 42 和凸出 40 流体连通。通过使得衬套插入件 100 的开口和底部 44 的凸出 40 对准,这些开口 42 能够使得大气进出垃圾桶组件的内部,这能够在用户从垃圾桶组件 20 拆除垃圾袋时抑制或防止在垃圾桶组件 20 内出现负压区域(例如与周围环境相比)。另外,在一些变型中,在用户将垃圾或其他材料插入到垃圾桶组件 20 中的垃圾袋中时,在垃圾桶组件 20 内的空气能够通过开口 42 和凸出 40 离开,由此阻止在垃圾桶组件 20 内出现正压区域(例如与周围环境相比),并且使得垃圾袋能够自由扩展。

[0052] 如上所述,垃圾桶组件 20 可以包括后壁 28。沿着后壁 28,垃圾桶 20 可以包括后盖 54。如图 5 所示,后盖 54 可以封装和 / 或保护背面封罩(enclosure) 56。在一些实施方案中,背面封罩 56 可以容纳有助于垃圾桶 20 的电源 66。例如,在一些实施方案中,背面封罩 56 可配置为接收并保持至少一个电池。背面封罩 56 可以具有大体上低轮廓结构。例如,背面封罩 56 可以从后壁 28 向后延伸小于或等于大约 1 英寸或者小于或等于在后壁 28 的外侧表面和前壁 30 的最前面部分之间的距离的大约 1/5 的距离。

[0053] 参照图 6,在一些实施方案中,用于电动驱动机构 58 的外壳 64 可以设置在后壁 28 上或附近,例如设置在背面封罩 56 的上方或顶部上。在所示的实施方案中,外壳 64 为大体上圆柱形结构或壳体。在其他实施方案中,外壳 64 可以为其它各种设计和形状。在一些实施方案中,外壳 64 的形状和位置、驱动机构 58 在外壳 64 内的紧凑性和 / 或背面封罩 56 的人体上低轮廓可以使得垃圾桶组件 20 能够与建筑物或房间的墙壁(未示出)或其他人体上平坦的垂直结构齐平或基本上齐平地设置。因此,垃圾桶组件 20 可以具有更小的占地面积和 / 或占据更少的地板空间。在一些实施方案中,背面封罩 56 和 / 或驱动机构外壳 64 从后壁 28 向后延伸小于或等于大约 1.5 英寸。

[0054] 垃圾桶组件 20 的一些实施方案包括边缘构件 38。如图 4 所示,在一些实施方案中,边缘构件 38 例如通过紧固件 29(例如螺钉)与背面封罩 56 和 / 或主体部件连接。边缘构件 38 的一些实施方案配置为相对于主体部件 22 和 / 或盖子 24 转动。边缘构件 38 可以由各种材料(例如塑料或金属)制成。边缘构件 38 和主体部件 22 可以由相同或不同的材料制成。例如,边缘构件 38 和主体部件 22 可以由塑料材料构成。边缘构件 38 的一些实施方案可以与垃圾桶组件 20 的上边缘 26 接合和 / 或重叠。

[0055] 如图 7 所示,该图显示出边缘构件 38 的底部,边缘构件 38 的一些实施方案配置为支撑和 / 或遮住电气部件,例如传感器组件 102 和 / 或将传感器组件 102 与电源 66 或控制器连接的电线 112。一个或几个引导构件 114 可以设置在边缘构件 38 的顶面下方,以大体上阻止电线 112 在边缘构件 38 内的运动,由此大体上将电线隐藏而不被看到,并且降低电线 112 的磨损或其他损坏的可能性。

[0056] 参照图 7-8,在一些实施方案中,边缘构件 38 配置为将垃圾袋的上部固定或保持在边缘构件 38 和主体部件 22 的上边缘 26 之间。边缘构件 38 可以包括大体上向下延伸(例如,沿着与边缘构件 38 的顶面大体上垂直的方向)的壁 116。在边缘构件 38 的一些结构中,壁 116 沿着主体部件 22 向下延伸越过上边缘 26。在一些实施方案中,垃圾袋保持部件(例如径向向内延伸的翼片 118)设置在壁 116 的内侧上。翼片 118 可以包括边缘接合元件,例如凹槽 119。在一些实施方案中,凹槽 119 设置在翼片 118 的一个端部处和 / 或设置在边缘构件 38 的顶面附近。翼片 118 可以配置为例如通过摩擦配合接收上边缘 26、与之嵌

套和 / 或可拆卸地锁紧到其上。在一些实施方案中,在将垃圾袋放在主体部件 22 中并且垃圾袋的上部设置在上边缘 26 的卷边或环形唇部上时,边缘构件 38 可以如此设置(例如转动到适当位置),从而垃圾袋设置在边缘构件 38 和主体部件 22 之间。另外,翼片 118 可以配置为接收上边缘 26 的卷边或环形唇部,由此将一部分垃圾袋大体上固定在翼片 118 和上边缘 26 之间并且阻止垃圾袋掉落到主体部件 22 中。

[0057] 在如图 9-10 所示的一些实施方案中,边缘构件 38 可以设置和 / 或保持在打开位置中(例如克服重力和 / 或不需要人们将边缘构件 38 保持在打开位置中)。打开位置例如可以使得用户将垃圾袋安装在垃圾桶组件 20 中和 / 或具有扩展的功能,例如清洁垃圾桶组件 20 的内部。如所示的,在一些实施方案中,边缘构件 38 相对于主体部件转动以到达打开位置。在一些实施方案中,边缘构件 38 包括保持机构。例如,如图 9 所示,边缘构件 38 可以包括第一凸轮结构 120(例如齿),它可以位于边缘构件 38 的后部并且位于外壳 64 的相邻侧面上。第一凸轮结构 120 可以配置为接合第二凸轮结构(例如斜面)122。在一些实施方案中,第二凸轮结构包括配置为接收第一凸轮结构 120 的一部分或全部的凹槽 124。凹槽 124 可以位于斜面 122 的端部处或其附近,并且可以设置在垃圾桶组件 20 的后部附近。在一些实施方案中,随着边缘构件 38 转动(例如朝着打开位置),第一凸轮结构 120 转动(例如,顺时针)至邻接斜面 122。第一凸轮结构 120 可以接合(例如滑动和 / 或向上缩)斜面 122 并且进入到凹槽 124 中,这可以保持第一凸轮结构。因此,边缘构件 38 可以保持在打开位置中,同时用户更换袋子或完成一个或其它功能。在完成这些任务时,边缘构件 38 可以沿着大体上相反的方向(例如逆时针方向)转动到闭合位置,在该位置中如上所述的翼片 118 可以与主体部件的上边缘 26 接合。

[0058] 盖子 24 和边缘构件 38 可以通过任意方式枢轴连接到垃圾桶组件 20 上。在所示的实施方案中,盖子 24 和边缘构件 38 大体上沿着相同的枢轴枢轴连接至垃圾桶组件 20。枢轴连接可以为允许枢轴运动的任意形式连接,例如铰接件、销或杆。例如,参照图 6 和 9,第一枢轴部件(例如销)50、52 横向延伸穿过用来打开和关闭盖子 24 的驱动机构 28 的外壳 64,并且能够用来容纳在设在边缘构件 38 的后部处的相应第二枢轴部件(例如通孔)36 中。销 50、52 可以延伸穿过通孔 36,以将边缘构件 38 沿着枢轴枢轴连接至垃圾桶组件 20 的外壳 64 上。参照图 2,在一些实施方案中,整个盖子 24 的一部分可以定位、设置或容纳在位于边缘构件 38 的内部的凹槽 68 中。在一些实施方案中,可以将减震部件 110(例如泡沫、弹簧、橡胶垫或任意其它大体上柔性、弹性和 / 或减震结构)设置在盖子 24 和边缘构件 38 之间,以便例如在盖子 24 闭合到边缘构件 38 上时提供降噪。

[0059] 在一些实施方案中,盖子 24 的后部能够沿着与边缘构件 38 相同的枢轴枢轴连接到垃圾桶组件 20。例如,盖子 24 的后部能够通过销 50、52 沿着与边缘构件 38 相同的枢轴枢轴连接到垃圾桶组件 20,这些销也能够将边缘构件 38 连接到垃圾桶组件 20 的驱动机构外壳 64。

[0060] 在一些实施方案中,销 50、52 可以延伸穿过边缘构件 38 和外壳 64,并且用来容纳在固定在与驱动机构部件 74 相邻设置的盖子 24 后部的内侧上的其它结构的相应通孔 72 中。在一些实施方案中,销 50、52 能够沿着相同的枢轴将盖子 24 和边缘构件 38 枢轴连接到垃圾桶组件 20。在一些实施方案中,如图 5 所示,可以在销 50、52 上设置偏压构件 126(例如一个或多个扭簧)。偏压构件 126 可以提供偏压力,以帮助盖子 24 的打开和 / 或关闭,这

能够减小在使得盖子 24 在打开和关闭位置之间运动时由电机 78 消耗的能量,和 / 或能够允许使用更小型的电机(例如,在规格和 / 或功率输出方面更小的电机)。

[0061] 参照图 11, 盖子可以包括盖子驱动机构部件 74。在一些变型中, 盖子驱动机构部件 74 配置为邻接、配合、接触、接收和 / 或被收纳在外壳 64 中的驱动机构 58 中, 以便于将盖子 24 打开和关闭。在一些变型中, 盖子驱动机构部件 74 包括大体上 C 形部分。在一些实施方式中, 盖子驱动机构部件 74 可以包括转动支撑构件(例如凸缘 88、90)和盖子位置感测元件(例如标志构件 92、94)。如所示的, 凸缘 88、90 和 / 或标志构件 92、94 可以径向向内延伸, 并且可以连接在盖子 24 的后下侧处或附近。如在下面更详细描述的一样, 例如在要驱动电机 78 以便将盖子 24 打开或关闭时, 控制器 70 可以与感测系统通信以确定垃圾桶组件的各种功能和参数。如所示的, 在一些实施方案中, 整个盖子驱动机构部件 74 的一部分或全部可以固定到盖子 24 的后部内侧。

[0062] 参照图 5-6 和 11-12, 驱动机构 58 可以包括控制器或电路板 70。在一些实施方案中, 在外壳 64 中的驱动机构部件可以包括驱动电机 78 和轴 80。一些实施方案包括偏压构件例如弹簧 82。一些实施方案包括离合机构 84 和 / 或力矩传递构件例如端部构件 86。驱动机构部件中的至少一些可以从其它部件中拆除。例如, 驱动电机 78 或其它部件可以是可拆卸的, 从而便于维修、更换等。

[0063] 参照图 9, 驱动机构 58 可以包括第一位置传感器 96(例如闭合位置传感器)和第二位置传感器 98(例如打开位置传感器)。位置传感器 96、98 可以包括成对的光学邻近检测器(例如光发射器), 它与中间传感器 128(例如光接收器)合作。但是, 也可以采用其它类型的传感器。如所示的, 位置传感器 96、98 可以一起设置在一个外壳中, 这能够便于可制造性和修理, 并且能够降低由位置传感器 96、98 占据的总体空间。如在下面所详细描述的一样, 在一些实施方案中, 位置传感器 96、98 能够配置为便于在盖子 24 在打开和关闭位置之间运动时检测其位置。电机 78 和位置传感器 96、98 可以配置为与控制器 70 通信, 从而便于对盖子 24 的运动进行控制。

[0064] 在一些实施方案中, 盖子 24 包括标志构件 92、94, 它们可以取向或以其它方式配置为与位置传感器 96、98 合作来指示盖子 24 的位置。如图 9 所示, 在盖子 24 处于其起始位置或完全关闭位置时, 标志构件 92 设置在位置传感器 96 和中间传感器 128 之间, 并且标志构件 94 没有位于位置传感器 98 和中间传感器 128 之间。在一些结构中, 位于位置传感器 96 和接收器 128 之间的标志构件 92 阻挡了在位置传感器 96 和中间传感器 128 之间的发射(例如信号)。在一些实施方案中, 可以将这种发射阻挡解释(例如通过控制器实施算法)为分辨盖子 24 的位置。例如, 控制器 70 可以配置为在标志构件 92 位于位置传感器 96 中从而阻挡了向中间传感器 128 发射时确定盖子 24 处于其初始或关闭位置。

[0065] 在一些实施方案中, 在盖子 24 转动到完全打开位置时, 标志构件 92 如此转动, 从而它不再位于位置传感器 96 和中间传感器 128 之间。但是, 在一些实施方案中, 在盖子 24 转动到完全打开位置时, 标志构件 94 如此转动, 从而它位于位置传感器 98 和中间传感器 128 之间, 由此阻挡了在传感器 98 和中间传感器 128 之间的发射(例如, 信号)。

[0066] 在一些实施方案中, 在标志构件 94 位于位置传感器 98 和中间传感器 128 并且标志构件 92 没有位于位置传感器 96 和中间传感器 128 之间时, 控制器 70 可以配置为确定盖子 24 处于完全打开位置。在一些实施方案中, 控制器 70 可以配置为在出现相反取向时确

定盖子 24 处于完全打开位置。在一些实施方案中,中间传感器 128 配置为接收来自位置传感器 96、98 中的一个或两个的发射。在一些实施方案中,位置传感器 96、98 中的一个或两个配置为接收来自中间传感器 128 的发射。

[0067] 可以采用标志构件和位置传感器的任意组合来检测盖子 24 的各种位置。例如,可以按照与上述类似或不同的方式采用另外的传感器和标志构件来检测另外的位置(例如约半打开位置)。一些实施方式具有位于壳体 64 中的标志构件和盖 24 上的位置传感器。

[0068] 参照图 2,垃圾桶组件 20 还可以包括设置在垃圾桶组件 20 的大体上外部上的传感器组件 102。在所示的实施方案中,传感器组件 102 在大体上上面中央部分中设置在边缘构件 38 的前部附近。在一些实施方案中,传感器组件 102 可以包括外罩 104,它可以包括透明或半透明结构,以便能够传送和/或接收光信号。例如,外罩 104 可以由玻璃或塑料(例如聚碳酸酯、Markrolon®)等制成。在一些实施方案中,外罩 104 可以与边缘构件 38 的顶面基本上齐平。在一些实施方案中,传感器组件 102 可以感应用户的运动以检测盖子 24 打开或关闭。例如,传感器组件 10 可以感应从用户(身体部分)反射或发射的信号或特征(例如光、热、导电性、磁性等)。在一些实施方案中,传感器组件 102 如在 2011 年 3 月 4 日提交的美国专利申请公布 No. 2011/0220647 中所述一样配置,该文献的全部内容由此通过引用而结合到本文中。

[0069] 在一些实施方案中,盖子 24 可以配置为允许在对垃圾桶组件 20 的部件(例如电机 78、轴 80 等)没有损害(例如剥落、磨损)的情况下对盖子 24 进行手动操作。如前面所指出的一样,并且如图 11 所示,盖子 24 可以包括凸缘 88、90,它们可以设置在盖子 24 的后底面上。如所示的,在凸缘 88、90 之间存在大体上开放的周向空间。

[0070] 凸缘 88、90 可以配置为接合离合机构 94,它能够使得盖子 24 在垃圾桶组件 20 的电机 78、轴 80 或某些其他部件没有转动或基本上没有转动的情况下转动,这将在下面更详细地描述。如图 12 所示,离合机构 84 包括一个或多个力矩传递构件,例如臂 106、108,其能够从离合机构 84 的主体径向向外延伸。在一些实施方案中,臂 106、108 彼此间隔开例如大约 180 度。可以考虑各种其他角度,例如至少大约 30°、大约 45°、大约 60°、大约 90°、大约 120°、它们之间的数值等。

[0071] 臂可以设置在凸缘 88、90 之间的周向空间中。例如,臂 106、108 可以邻接或接触凸缘 88、90 的表面,如图 13 所示。在这些结构中,在臂 106 与凸缘 90 邻接并且臂 108 与凸缘 90 邻接时,在臂 108 的非邻接表面 108a 和凸缘 88 的非邻接表面 88a 之间存在周向距离 D1。在一些实施方案中,在臂 106 的非邻接表面 106a 和凸缘 90 的非邻接表面 90a(未示出)之间形成大体上相等的周向距离 D2(未示出)。在一些结构中,周向距离 D1 和/或 D2 大于或等于盖子从打开位置向关闭位置转动的量。例如,周向距离 D1 和/或 D2 可以为至少大约 60° 和/或小于或等于大约 125°。在一些变型中,周向距离 D1 和/或 D2 大于或等于大约 80°。如下面所述一样,这种结构可以使得盖子 24 能够以手动的方式在打开和关闭位置之间运动。

[0072] 在一些实施方案中,离合机构 84 在偏压构件例如弹簧 82 和端部构件 86 之间设置在电机轴 80 上。在一些实施方案中,端部构件 86 固定在电机轴 80 上,因此来自电机 78 的力矩可以通过轴 80 传送到端部构件 86 中。在一些实施方案中,离合机构 84 在端部构件 86 上的偏压会导致在离合器 84 和端部构件 86 之间的摩擦界面。在离合器 84 和端部构件 86

之间的摩擦界面会导致离合器 84 在轴 80 转动时转动。例如,来自电机 78 的力矩可以传递穿过轴 80、通过端部构件 86,并且进入到离合机构 84 中。在一些变型中,一些部件(例如弹簧 82、离合机构 84 和端部构件 86)沿着轴 80 的一部分纵向长度大致共轴对准地设置。

[0073] 在一些实施方案的操作期间,电机 78 可以使得轴 80 转动,该轴能够使得端部构件 86 转动,这能够使得离合机构 84 转动(例如,通过在端部构件 86 和离合机构 84 之间的摩擦界面)。离合机构 84 的转动会导致臂 106、108 的转动。因为在一些实施方案中,臂 106、108 大体上邻接或接触盖子 24 的凸缘 88、90,臂 106、108 的转动会导致凸缘 88、90 的转动,并因此导致盖子 24 的转动(例如从关闭向打开位置)。

[0074] 如图 13 所示,由于在凸缘 88、90 的非邻接表面 88a、90a 以及臂 106、108 的非邻接表面之间的周向距离 D1、D2,所以能够在转动电机 78 的情况下以手动的方式打开盖子 24。例如,现在将对如图 13 所示的盖子的手动操作进行说明。如图 13 所示,盖子 24 处于起始或关闭位置。如果用户要朝着打开位置手动操作盖子 24(例如在所示的实施方案中使得盖子顺时针转动),则凸缘 88 将大体上沿着弧形路径顺时针转动,并且凸缘 90 将沿着大体上相同的方向(例如顺时针方向)转动大约相等的距离。在离合机构 84 的臂 106、108 上将不会施加任何力,如上所述,离合机构通过端部构件 86 与电机轴 80 连接。同样,用户然后会关闭盖子 24,并且凸缘 88、90 在盖子打开时将沿着大体上相反的方向(逆时针方向)转动,并在盖子 24 处于起始位置时回到其原始位置,而不会向离合机构 84 的臂 106、108 施加任何力。因此,在一些实施方案中,不需要任何力施加在臂 106、108 上以使得离合机构 84 和电机轴 80 转动。

[0075] 如上所述,在一些实施方案中,可以采用动力操作驱动机构 58 来打开或关闭盖子 24。例如,电机 78 可以使得轴 80 转动,轴 80 可以使得端部构件 86 转动,端部构件 86 能够将力矩传递给离合机构 84,离合机构 84 能够使得凸缘 88、90 和盖子 24 转动。在一些实施方案中,连接装置可以设置在电机 78 和轴 80 之间,以减少从电机 78 传递给所要驱动的其他机构例如盖子 24 的震动。在一些情况下,在驱动机构 58 的操作期间或之后(例如在盖子 24 正在打开和关闭位置之间运动时或之后),用户可以意外或有意地试图手动打开或关闭盖子 24。在这些情况下,凸缘 88、90 通常与臂 106、108 保持接触,而不是如上所述相对于臂 106、108 转动。在一些实施方案中,这是因为由电机 78(借助轴 80、端部构件 86 和 / 或离合机构 84)产生的旋转力促使臂 106、108 在凸缘 88、90 上转动(例如,臂 106、108 向凸缘 88、90 的表面上施加推压力以使得盖子 24 转动)。因此,在一些实施方案中,在电机已经打开或正在打开盖子 24 时手动关闭盖子 24 的用户作用在电机 78 的操作上。

[0076] 例如,在图 13 的电机 78 正在打开盖子 24 时,电机 78 促使臂 106、108 抵靠在凸缘 88、90 上并且使之沿着逆时针方向(从图 13 的透视图看)转动。还有在用户试图手动关闭盖子 24 时,盖子和凸缘 88、90 沿着逆时针方向受力(从图 13 的透视图看)。因此,在一些结构中,臂 106、108 正在受力以同时沿着相反的方向转动。这种场景会导致对离合机构 84 的臂 106、108、轴 80、电机 78 等造成损坏。在一些实施方案中,为了大体上避免这种损坏,离合机构 84 或其他结构可以配置为相对于端部构件 86 或其他部件转动。

[0077] 在一些实施方案中,离合机构 84 包括第一凸轮面 180 和第一回复面 182。如图 12 所示,针对与离合机构 84 的纵向轴线大体上垂直延伸的平面,第一凸轮面 180 可以从第一高度向第二高度倾斜。第一回复面 182 可以与第一凸轮面 180 相交并且可以设置在第一和

第二高度之间。

[0078] 在一些实施方案中,端部构件 86 包括第二凸轮面 184 和第二回复面 186。针对与端部构件 86 和轴 80 的纵向轴线大体上垂直延伸的平面,第二凸轮面 184 可以从第一高度向第二高度倾斜。第二回复面 186 可以与第一凸轮面 180 相交,并且可以设置在第一和第二高度之间。

[0079] 端部构件 86 的第二凸轮面 184 和第二回复面 186 可以成形为与离合机构 84 的第一凸轮面 180 和第一回复面 182 对应,由此使得端部构件 86 和离合机构 84 能够配合接合。例如,第一凸轮面 180 的顶峰 180a 可以嵌套在第二凸轮面 184 的谷 184b 中,并且第二凸轮面 184 的顶峰 184a 可以嵌套在第一凸轮面 180 的谷 180b 中。

[0080] 如上所述,在一些实施方案中,来自电机 112 的力矩可以通过轴 80 传递给端部构件 86。在一些实施方案中,端部构件 86 通常例如通过紧固件(例如螺钉)与轴 80 大体上刚性连接。因此,在一些变型中,阻止或防止了端部构件 86 相对于轴 80 转动。在一些实施方式中,端部构件 86 配置为例如通过在第一和第二凸轮面 180、184 之间和/或在第一和第二回复面 182、186 之间的摩擦将来自电机 112 的力矩传递给离合机构 84。

[0081] 在一些实施方案中,离合机构 84 可以沿着轴 80 的一部分纵向长度平移。如所示的,偏压构件 82 可以将离合机构 84 偏压成与端部构件 86 接合。在一些实施方案中,离合机构 84 沿着一部分驱动轴 80 的平移(例如沿着大体上朝着电机 112 的方向)通常克服了偏压构件 80 的偏压。

[0082] 在一些实施方案中,在手动操作盖子 24 时,离合机构 84 和端部构件 86 相对于彼此转动。例如,在一些实施方案中,在手动操作盖子 24 时,第一和第二倾斜凸轮面 180、184 相对于彼此运动。在一些结构中,倾斜凸轮面 180、184 相对于彼此滑动,这导致倾斜的凸轮面相互攀爬。例如,在倾斜凸轮面 180、184 相对于彼此滑动时,倾斜凸轮面 180、184 的顶峰 180a、184a 在周向上彼此接近。

[0083] 在一些实施方案中,在第一和第二倾斜凸轮面 180、184 之间的相对运动(例如通过斜面的相互作用)迫使离合机构 84 和端部构件 86 分开。例如,离合机构 84 和端部构件 86 可以沿着轴 80 的纵向轴线在大体上相反的方向上被推动。在一些实施方案中,端部构件 86 通常受到限制而不会纵向运动(例如通过紧固件)。但是,离合机构 84 的一些实施方案能够通过沿着轴 80 平移而运动离开端部构件 86(例如克服偏压构件 82 的偏压)。因此,在一些实施方式中,倾斜凸轮面 180、184 的相对转动导致离合机构 84 克服偏压构件 82 的偏压而沿着轴 80 的一部分纵向长度平移(例如沿着大体上朝着电机 78 的方向)。一些实施方案可以便于离合机构 84 和端部构件 86 的相对转动,而不用在离合机构 84、端部构件 86、轴 80 和/或电机 78 上施加过大的应力,或者对它们造成损坏。因此,可以在不会在垃圾桶组件 20 的各个部件上施加过大应力或对它们造成损坏的情况下进行盖子 24 的手动操作。

[0084] 在一些实施方式中,在盖子 24 的手动操作中止时,偏压构件 82 的偏压会使得离合机构 84 返回成与端部构件 86 大体上完全接合。例如,在盖子 24 的手动操作中止之后,偏压构件 82 的偏压可以便于倾斜凸轮面 180、184 的重新接合。在一些实施方案中,重新接合离合机构 84 和端部构件 86 使得来自电机 78 的力矩能够传递给离合机构 84,这可以提供盖子的电动操作。因此,一些实施方案使得电机 78 和/或驱动轴 80 能够自动地和/或被动地与离合机构 84 和/或盖子 24 接合和/或脱开。

[0085] 虽然在一些实施方案和实施例的上下文中已经披露了这些垃圾桶,但是本领域技术人员要理解的是,本发明可以在这里具体披露的实施方案之外延伸到的垃圾桶的其他可选实施方案和 / 或用途及其显而易见的变型和等同方案。另外,虽然已经详细显示并且描述了垃圾桶的几个变型,但是在本发明范围内的其他变型对于本领域普通技术人员而言可以很容易想到。例如,可以包括齿轮组件和 / 或可选的力矩传递部件。例如,在一些实施方案中,垃圾桶组件 20 包括有齿轮组件。齿轮组件的一些实施方案包括齿轮减速装置(例如大于或等于大约 1:5、1:10、1:50、其间的数值,或者将提供所期望的特征的任意其他减速装置),这可以改变施加在轴 80、离合机构 84 和 / 或其他部件上的转动速度。

[0086] 还要想到的是,这些实施方案的具体特征和方面的各种组合或子组合是可以获得的,而这些都落入在本发明的范围内。应该理解的是,所披露的实施方案的各种特征和方面可以相互组合或替代,以便形成各种形式的垃圾桶。因此,本发明的范围不应该受到上面所述的具体实施方案的限制。

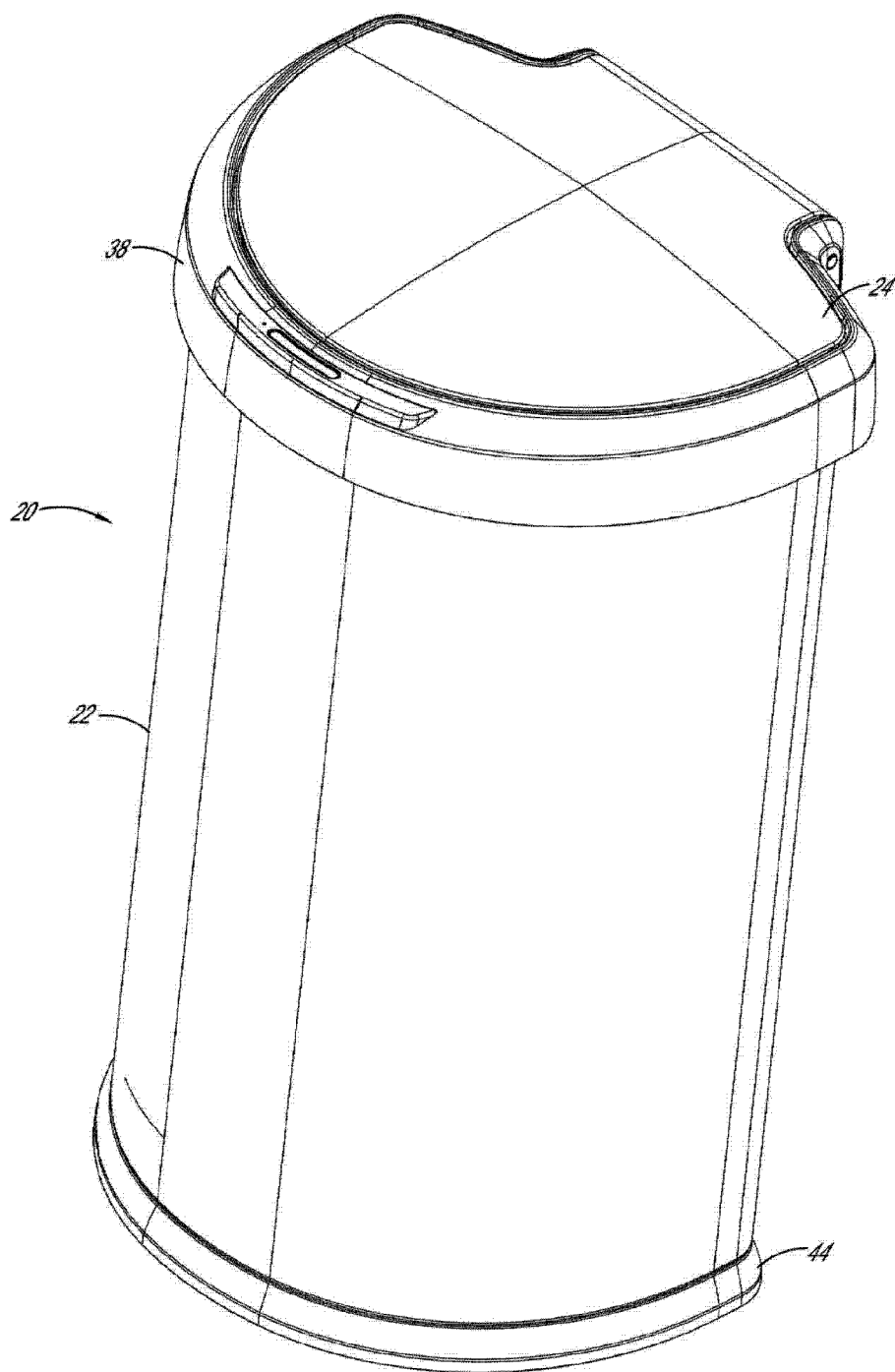


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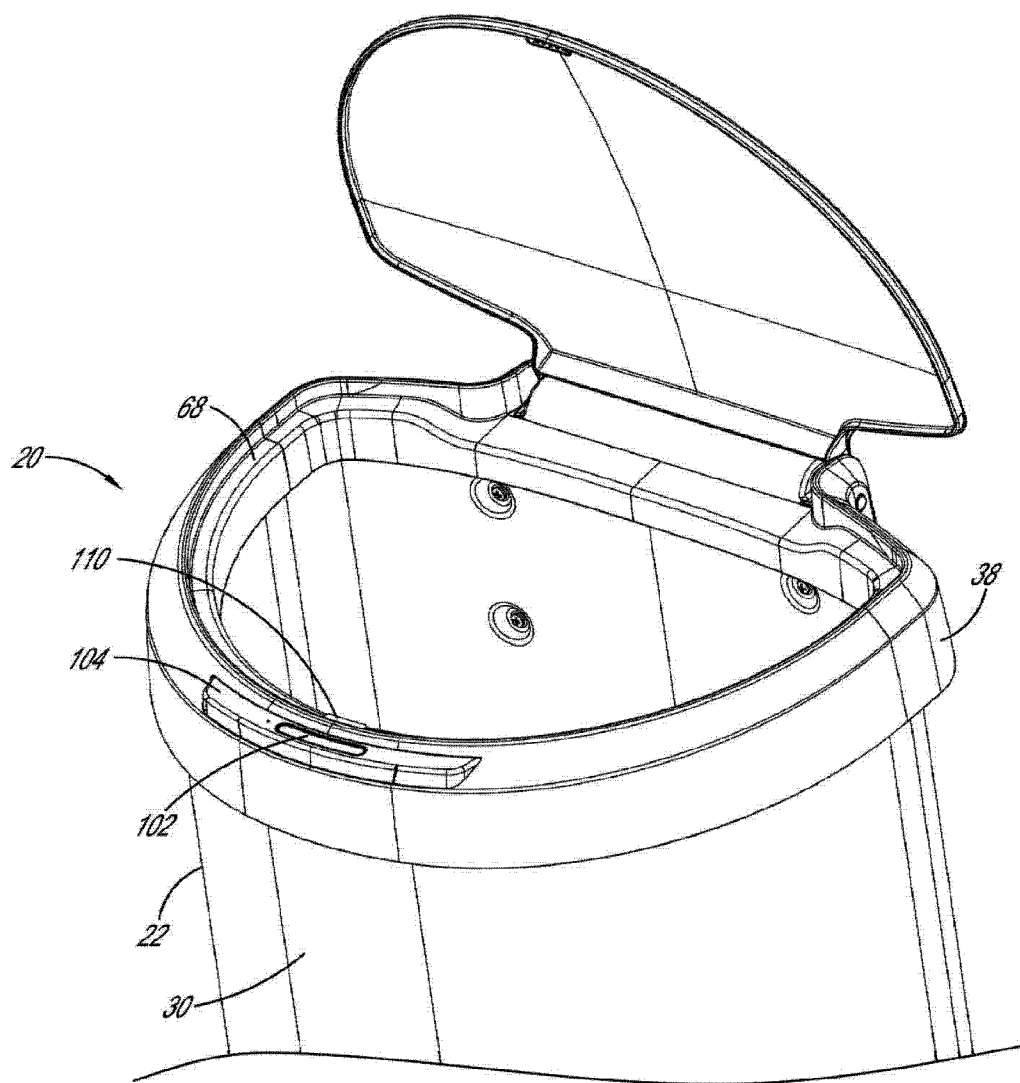


图 2

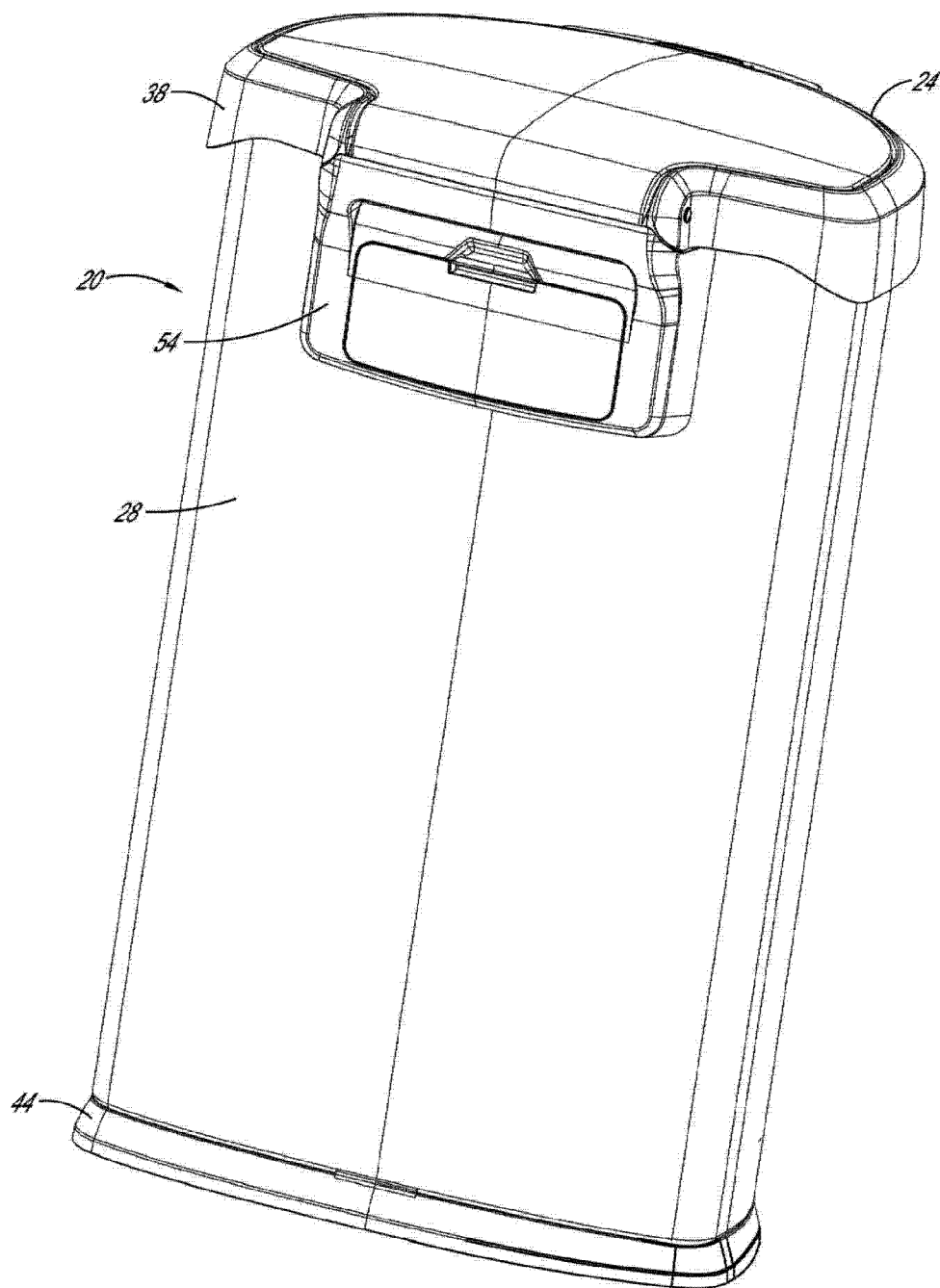


图 3

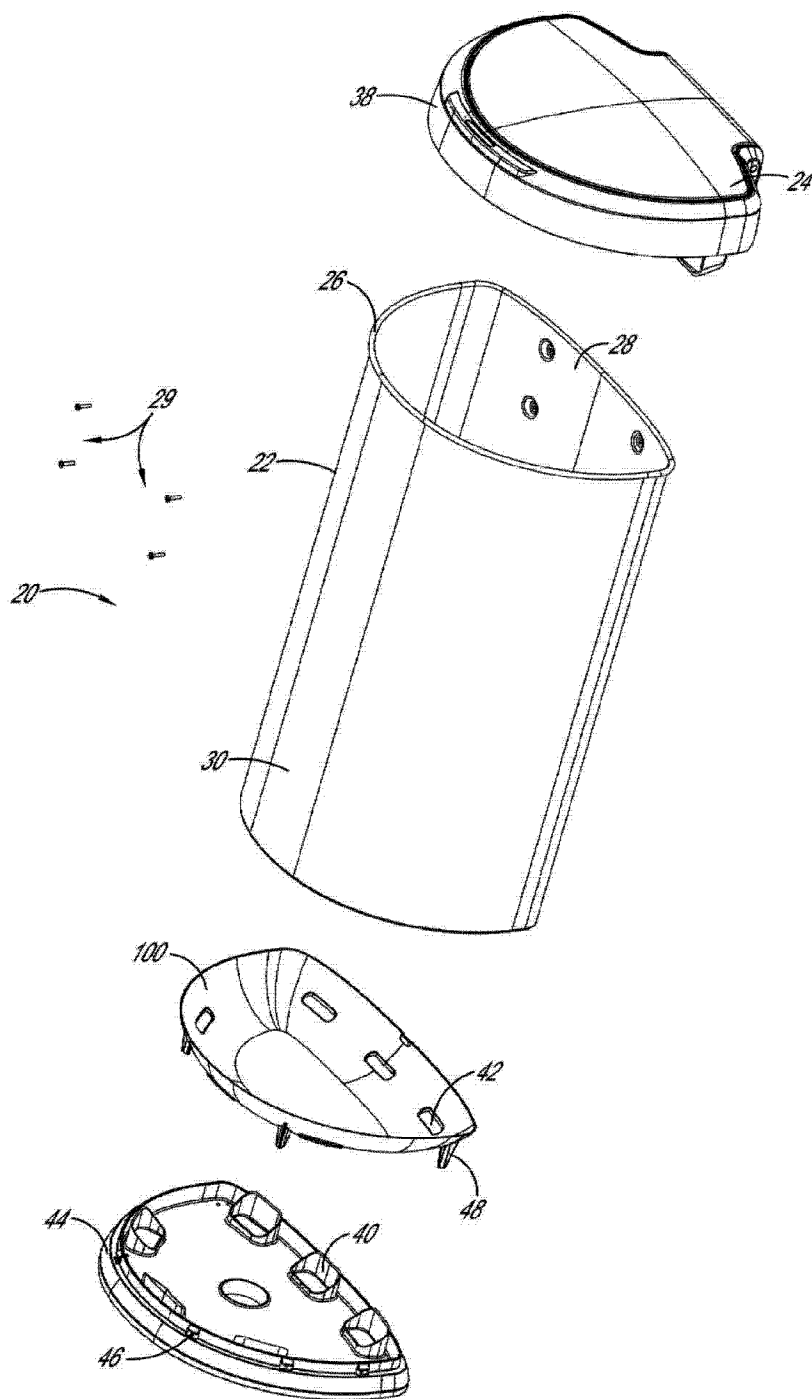


图 4

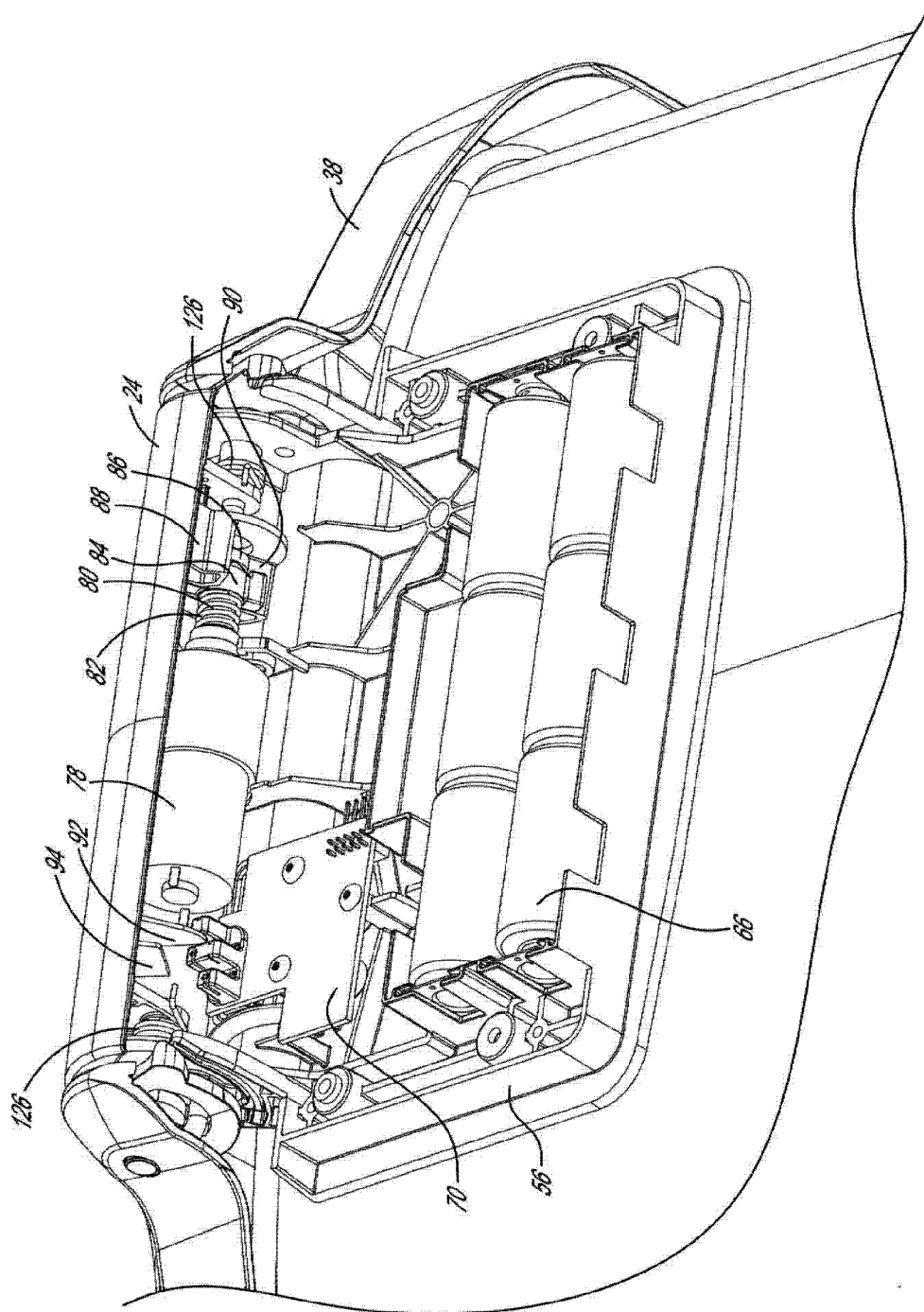


图 5

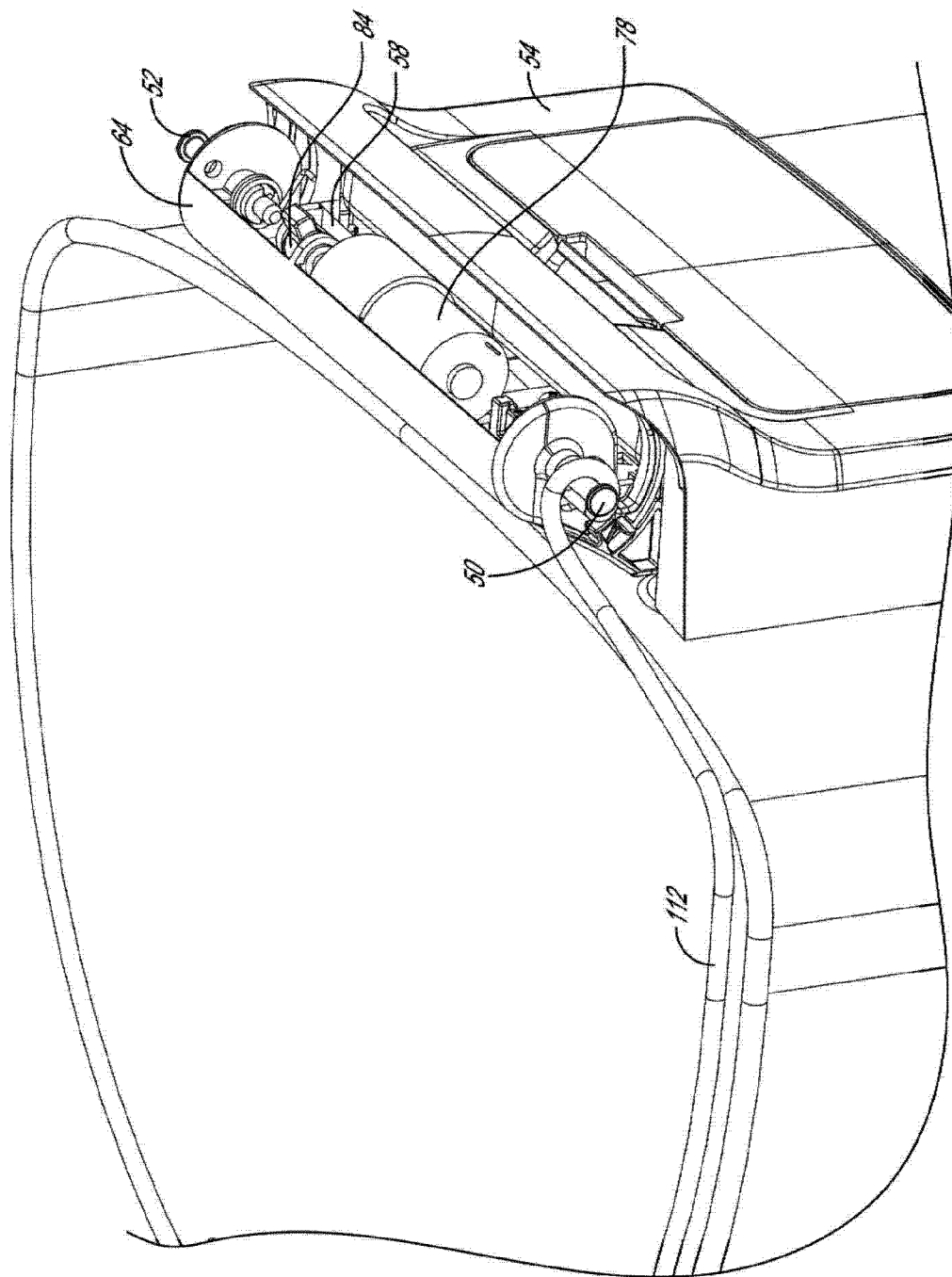


图 6

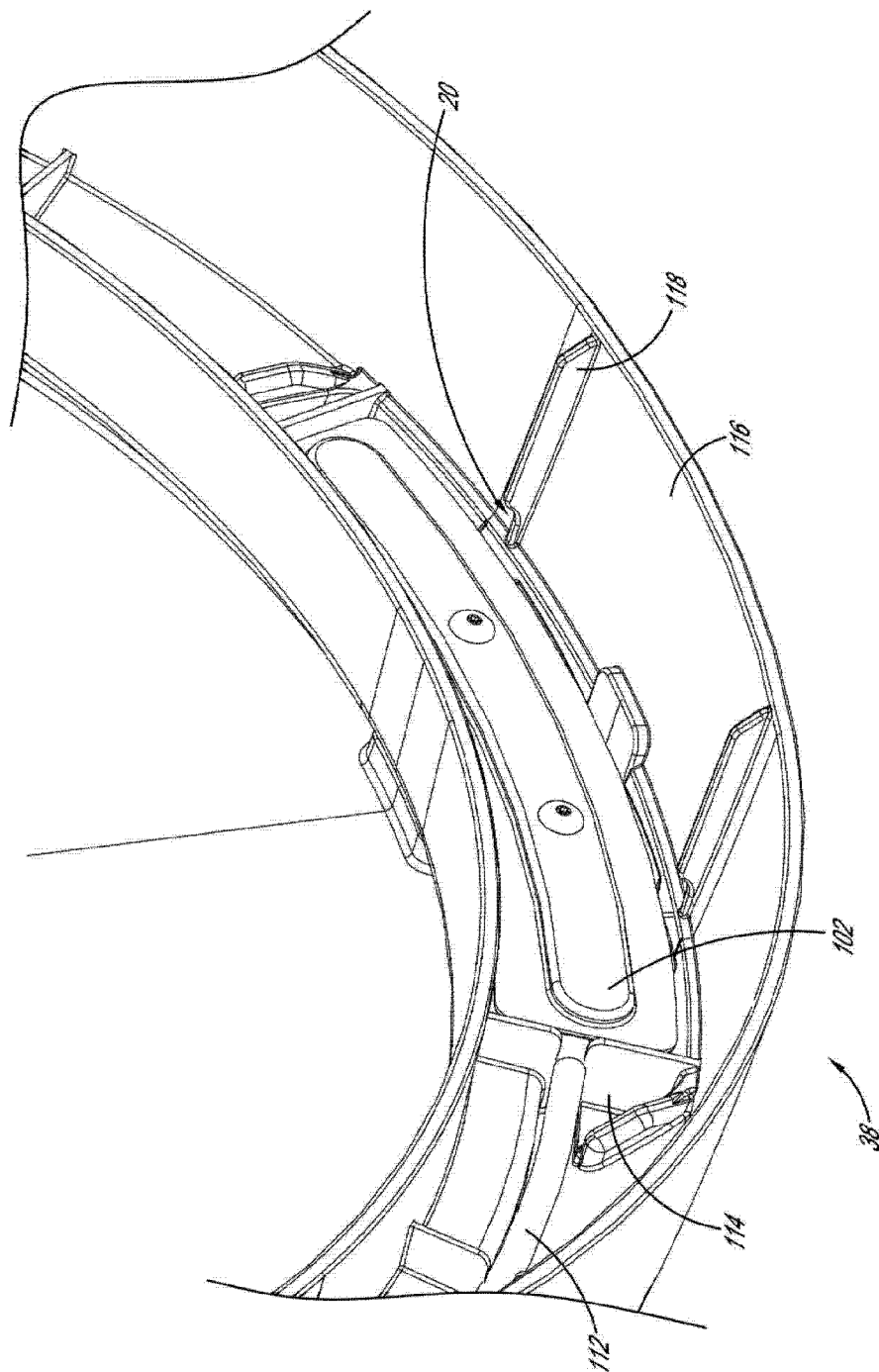


图 7

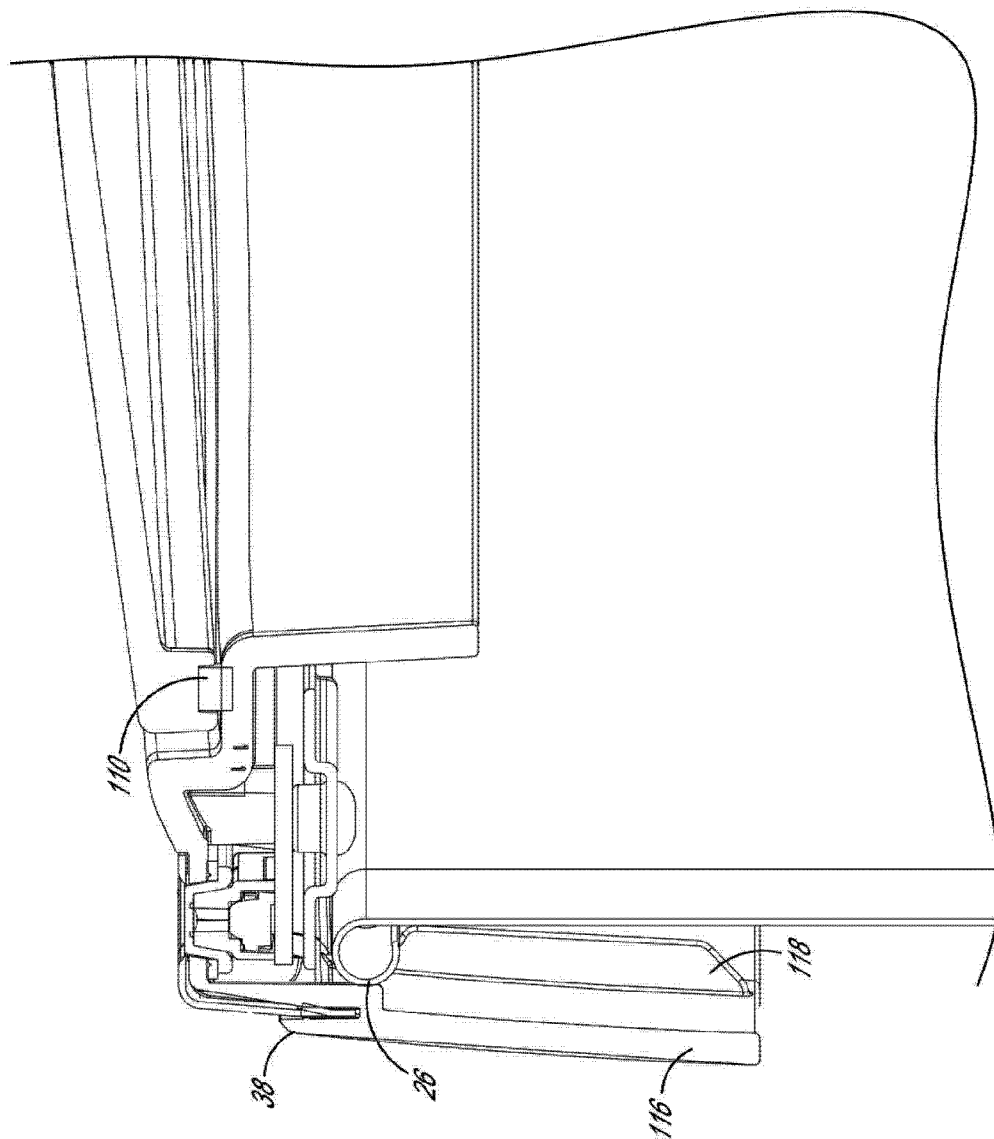


图 8

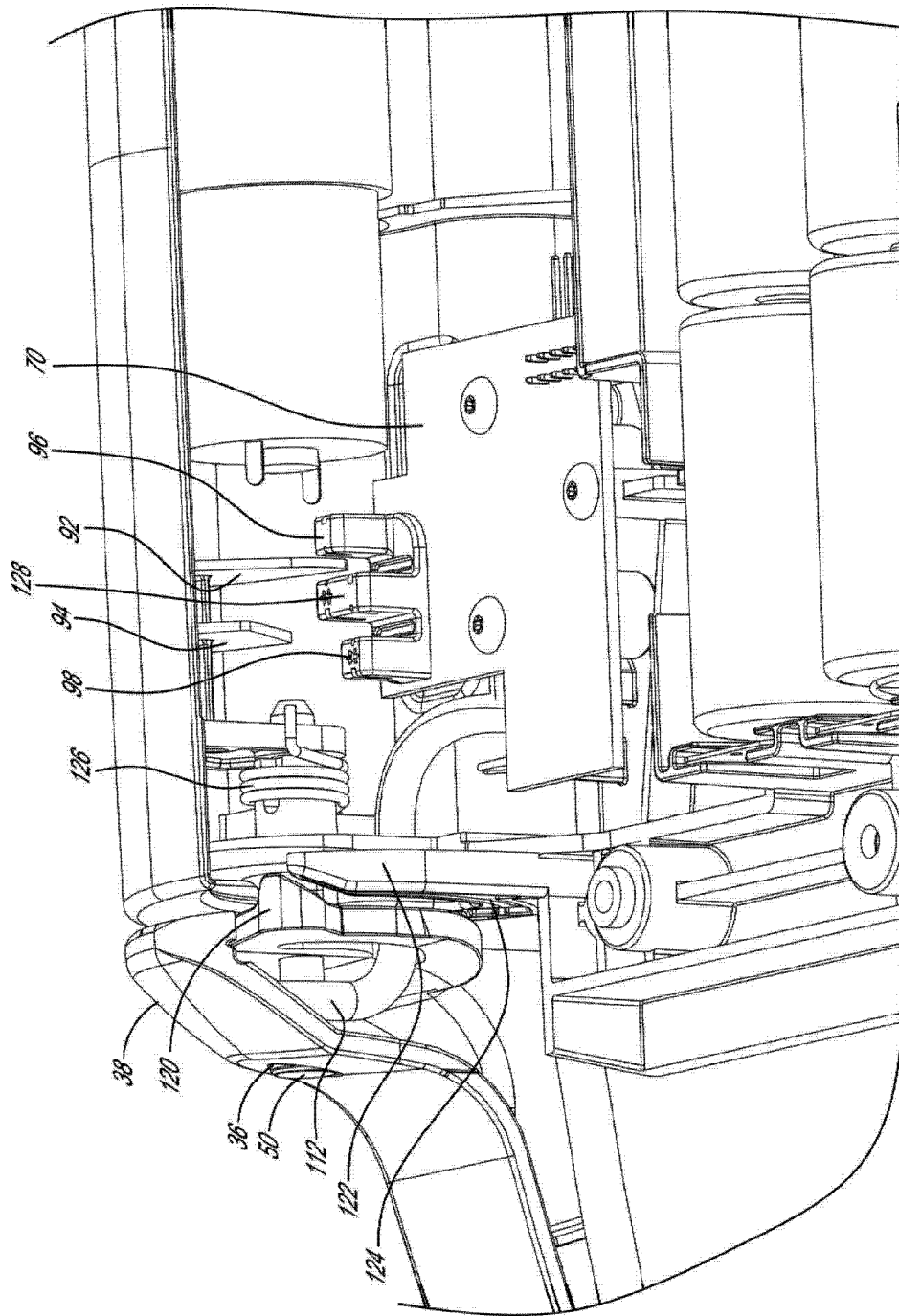


图 9

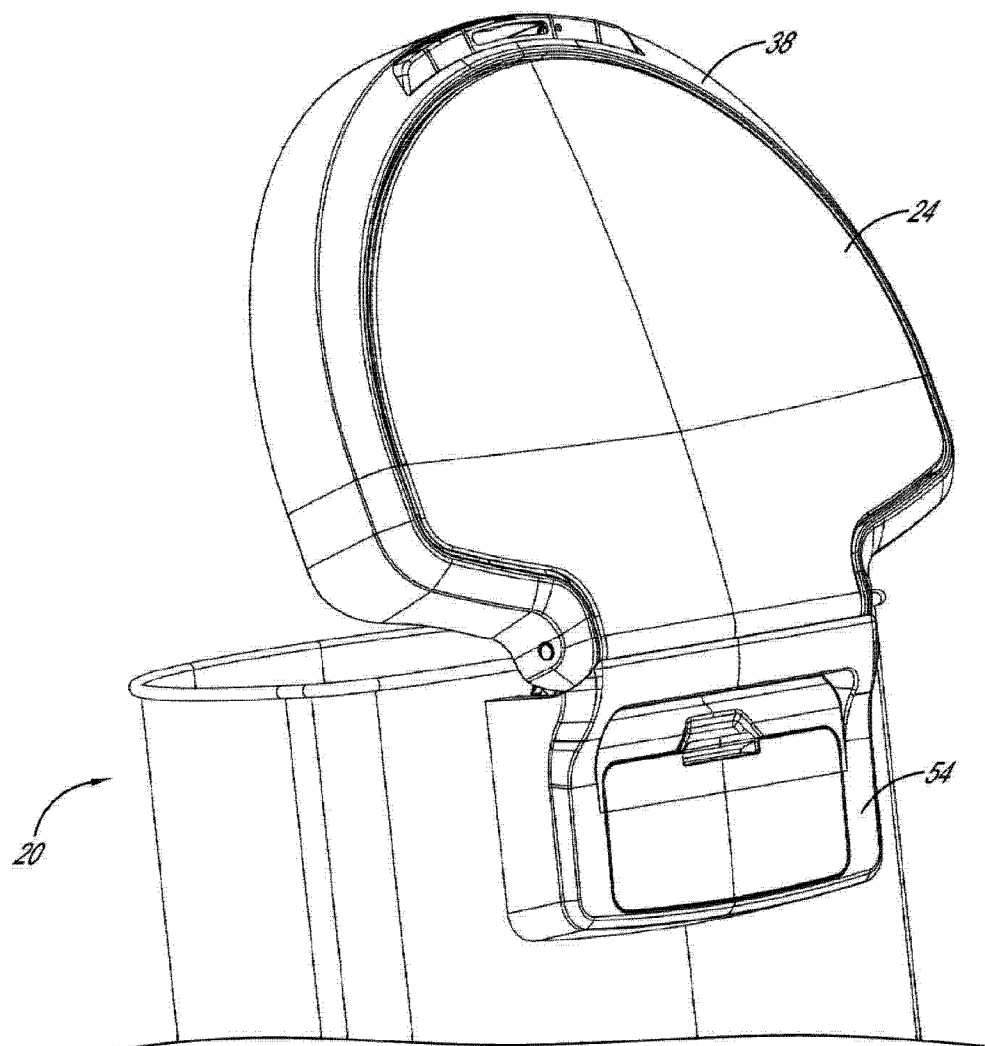


图 10

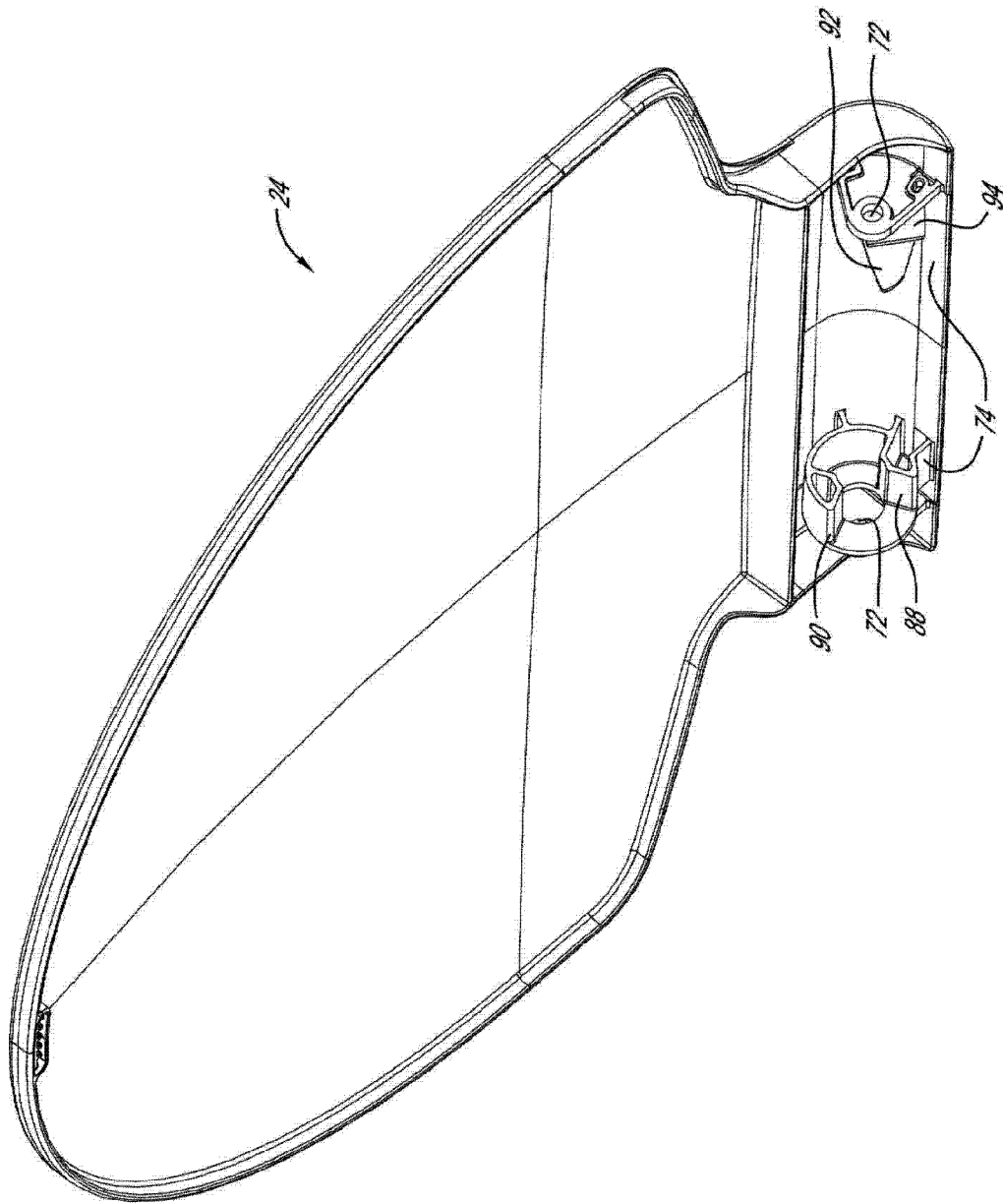


图 11

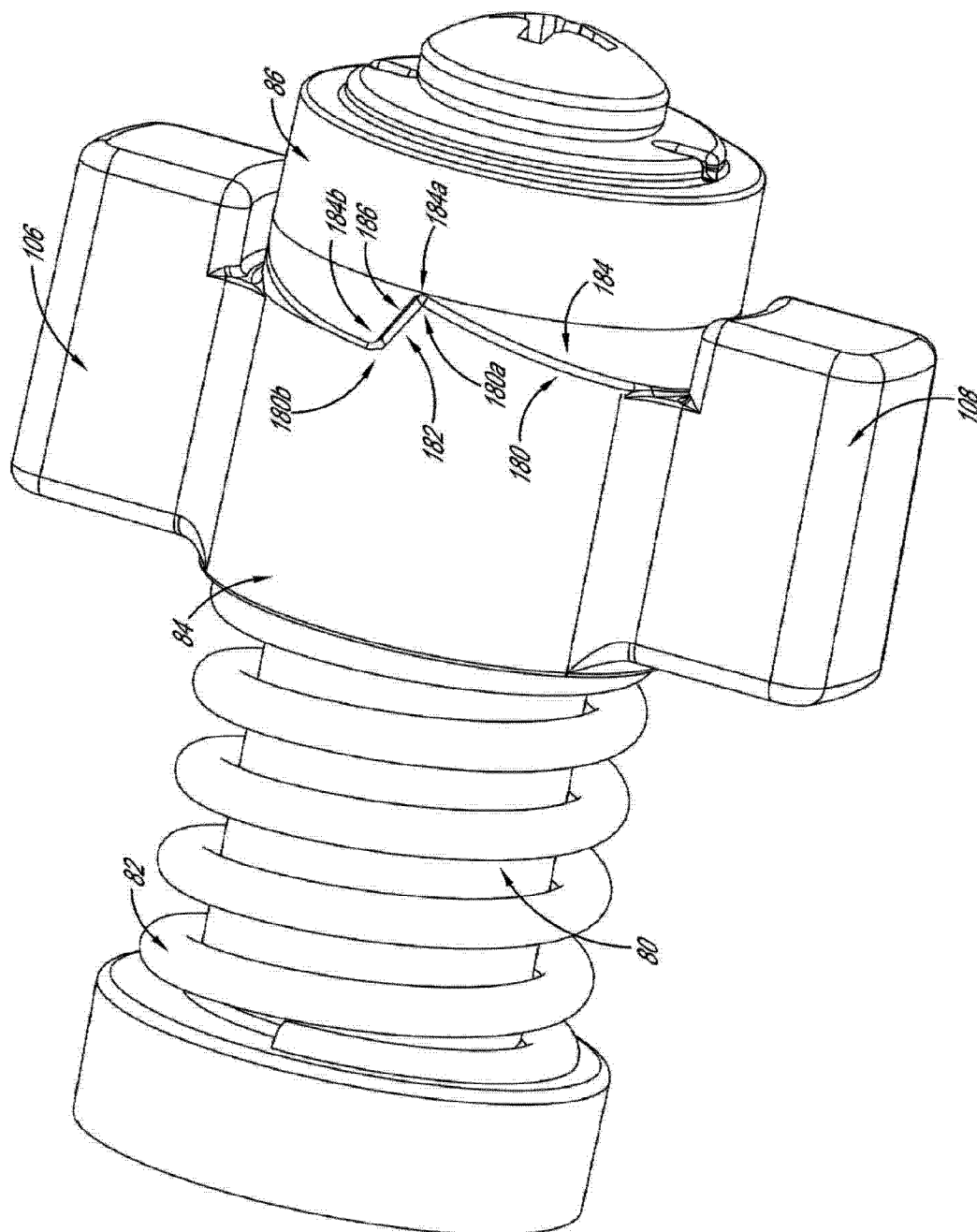


图 12

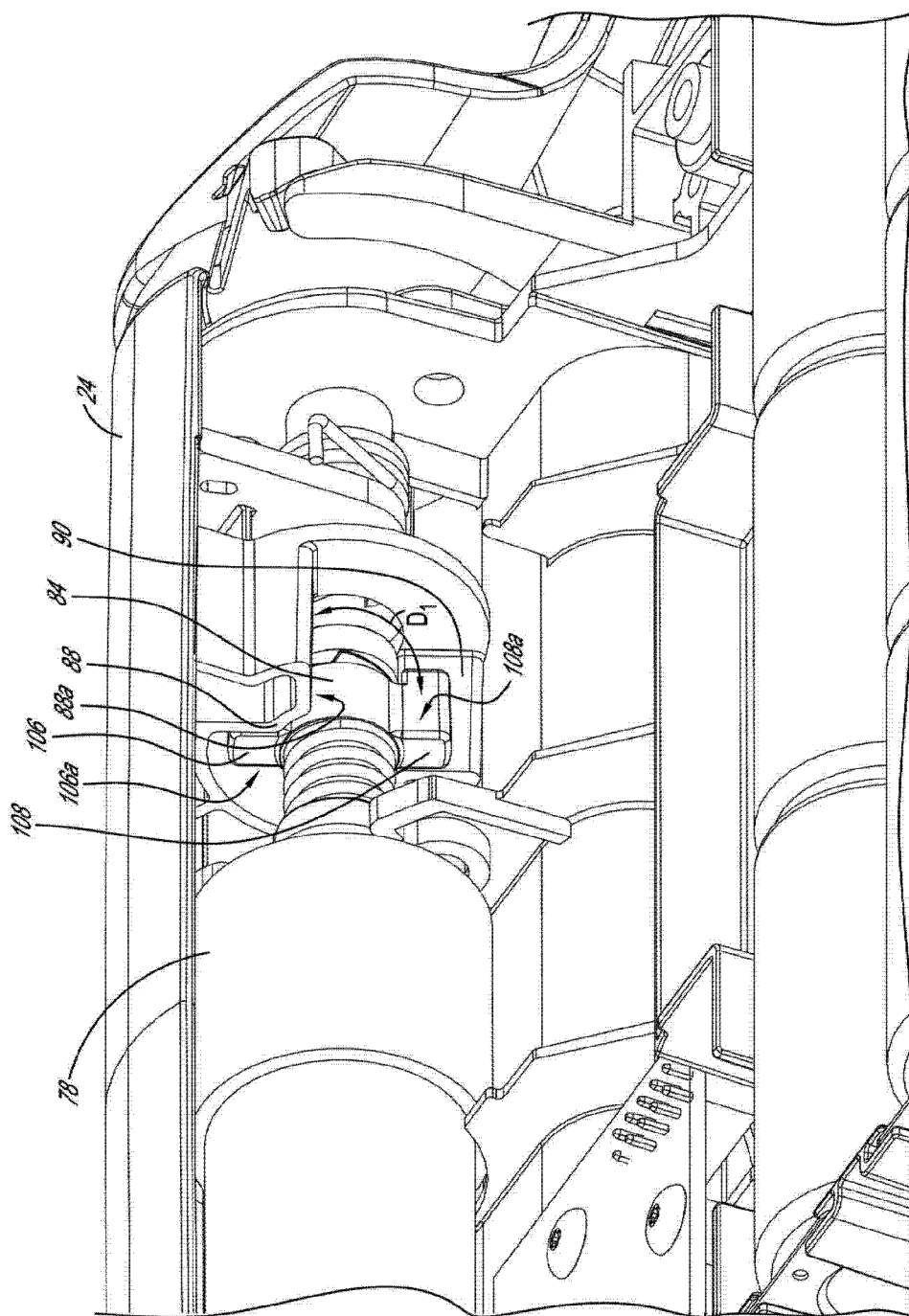


图 13



Espacenet

Bibliographic data: CN205169479 (U) — 2016-04-20

Built -in garbage bin switch structure and garbage bin of button spring

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Applicant(s): CHEN YIZHI ± (CHEN YIZHI)
Classification: - **international:** *B65D43/26; B65F1/16*
 - **cooperative:**
Application number: CN20152850311U 20151028
Priority number(s): CN20152850311U 20151028

Abstract of CN205169479 (U)

The utility model provides a built -in garbage bin switch structure of button spring, including the press the switch board, the press the switch board articulates in the upper end of garbage bin edge, and one side that the press the switch board is close to the bung is equipped with the block portion with the bung block, be equipped with the pressure spring between the inboard of press the switch board and the upper end edge of garbage bin, the surface of press the switch board is gradually to the arcwall face that extends to the side of the garbage bin. When the bung was closed, the pressure spring was located initial position, when exert pressure in during the press the switch board of the structure that opens and shuts, the infraplacement of press the switch board drives the mounting hole that is located on it and moves down, the pressure spring along mounting hole torsion gradually shifts to the lower extreme of mounting hole until the activity screw, and the bung is opened, when exerting exogenic action in bung when top, the bung falls down and carries out the block with block portion at this exogenic action, and the bung is closed. Simple structure, it is with low costs, and manufacturing and easy maintenance can be changed alone to this structure that opens and shuts.



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B65D 43/26(2006.01)

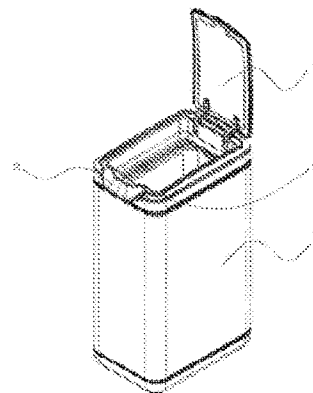
权利要求书1页 说明书3页 附图6页

(54) 实用新型名称

一种按键弹簧内置的垃圾桶开关结构及垃圾
桶

(57) 摘要

本实用新型提供一种按键弹簧内置的垃圾桶开关结构,包括按压开关板,按压开关板铰接于垃圾桶的上端边缘处,按压开关板靠近桶盖的一侧设有与桶盖卡合的卡合部;按压开关板的内侧与垃圾桶的上端边缘之间设有压簧;按压开关板的外表面为逐渐向垃圾桶侧面延伸的弧形面。桶盖闭合时,压簧位于初始位置;当施加压力于所述开合结构的按压开关板时,所述按压开关板向下移位,带动位于其上的安装孔向下移动,所述压簧沿着所述安装孔渐渐扭转变形直至活动螺钉移位至安装孔的下端,桶盖打开;当施加外力作用于桶盖上方时,桶盖在此外力作用下下落并与卡合部进行卡合,桶盖关闭。结构简单,成本低,且这个开合结构可单独进行更换,制造和维修方便。



CN 205169479 U

1.一种按键弹簧内置的垃圾桶开关结构,所述垃圾桶的上端设有翻转连接的桶盖,其特征在于:包括按压开关板,按压开关板铰接于垃圾桶的上端边缘处,按压开关板靠近桶盖的一侧设有与桶盖卡合的卡合部;按压开关板的内侧与垃圾桶的上端边缘之间设有压簧;按压开关板的外表面为逐渐向垃圾桶侧面延伸的弧形面。

2.根据权利要求1所述的按键弹簧内置的垃圾桶开关结构,其特征在于:所述按压开关板的内侧上设有安装压簧的安装孔;还包括设于安装孔内的活动螺钉,所述压簧套设于活动螺钉上,活动螺钉的下端抵在垃圾桶上。

3.根据权利要求2所述的按键弹簧内置的垃圾桶开关结构,其特征在于:所述安装孔具有多个。

4.根据权利要求2所述的按键弹簧内置的垃圾桶开关结构,其特征在于:所述活动螺钉的下端表面为弧面。

5.根据权利要求2所述的按键弹簧内置的垃圾桶开关结构,其特征在于:所述活动螺钉与垃圾桶的抵触位置位于所述按压开关板与垃圾桶铰接位置的外侧。

6.根据权利要求1所述的按键弹簧内置的垃圾桶开关结构,其特征在于:所述垃圾桶的上端设有两个用于安装按压开关板的铰接孔,所述按压开关板通过两个“7”字形轴销铰接于所述铰接孔上。

7.根据权利要求1所述的按键弹簧内置的垃圾桶开关结构,其特征在于:所述按压开关板外表面的切线与水平方向的最大夹角为 60° 至 90° 。

8.根据权利要求1所述的按键弹簧内置的垃圾桶开关结构,其特征在于:所述按压开关板卡合部的上表面为斜面,斜面沿远离按压开关板的方向逐渐倾斜向下。

9.根据权利要求1所述的按键弹簧内置的垃圾桶开关结构,其特征在于:所述垃圾桶的上端表面设有防污的凸边,所述凸边沿按压开关板的内侧方向设置。

10.一种垃圾桶,其特征在于,所述垃圾桶包括如权利要求1至9任一项所述的按键弹簧内置的垃圾桶开关结构。

一种按键弹簧内置的垃圾桶开关结构及垃圾桶

技术领域

[0001] 本发明涉及一种垃圾桶开关结构,尤其涉及一种按键弹簧内置的垃圾桶开关结构及垃圾桶,属于环卫领域。

背景技术

[0002] 随着垃圾桶在生活中的应用越来越广泛,为了不让直接暴露在人的视野范围及避免垃圾的异味散发,市场上的垃圾桶多设计了开合桶盖,常态时桶盖闭合,投放垃圾时桶盖打开,将垃圾投入桶内。

[0003] 目前市场上控制桶盖开合的方式主要为脚踏控制,在需要投扔垃圾时,在脚踏上作用向下的力将垃圾桶盖打开,在需要闭合时,松开脚踏板,作用在脚踏板上的外力消失,垃圾桶盖在重力下下落闭合。然而,采用脚踏方式控制桶盖的开合需要专用的驱动机构,如顶杆机构,顶杆驱动机构如脚踏板等,顶杆机构与桶盖的铰接部件的连接结构,使得垃圾桶的整体结构冗多复杂,无形中增加了制造的成本,同时造成它的制造和检修不易。

发明内容

[0004] 为了解决上述缺陷,本实用新型采取的技术方案是:

[0005] 一种按键弹簧内置的垃圾桶开关结构,所述垃圾桶的上端设有翻转连接的桶盖,其特征在于:包括按压开关板,按压开关板铰接于垃圾桶的上端边缘处,按压开关板靠近桶盖的一侧设有与桶盖卡合的卡合部;按压开关板的内侧与垃圾桶的上端边缘之间设有压簧;按压开关板的外表面为逐渐向垃圾桶侧面延伸的弧形面。

[0006] 优选地,所述按压开关板的内侧上设有安装压簧的安装孔;还包括设于安装孔内的活动螺钉,所述压簧套设于活动螺钉上,活动螺钉的下端抵在垃圾桶上。

[0007] 优选地,所述安装孔具有多个。安装孔的内径大于活动螺钉的外径,允许活动螺钉和压簧在其内进行小角度偏移。

[0008] 优选地,所述活动螺钉的下端表面为弧面,有利于活动螺钉和压簧在外力按压下偏转更加顺畅。

[0009] 优选地,所述活动螺钉与垃圾桶的抵触位置位于所述按压开关板与垃圾桶铰接位置的外侧。

[0010] 优选地,所述垃圾桶的上端设有两个用于安装按压开关板的铰接孔,所述按压开关板通过两个“7”字形轴销铰接于所述铰接孔上,实现所述垃圾桶开关结构进行拆卸,所述开合结构损坏时,可单独进行更换。

[0011] 优选地,所述按压开关板外表面的切线与水平方向的最大夹角 α 的范围为 60° 至 90° ,使用者可用膝盖按压即实现桶盖的打开和闭合。

[0012] 优选地,所述按压开关板卡合部的上表面为斜面,斜面沿远离按压开关板的方向逐渐倾斜向下,斜面结构使得桶盖在闭合时卡合部更容易与垃圾桶卡合。

[0013] 优选地,所述垃圾桶的上端表面设有防污的凸边,所述凸边沿按压开关板的内侧

方向设置,防止在桶盖打开时,灰尘或细小垃圾进入到桶体边缘和开关结构的缝隙。

[0014] 在桶盖闭合时,压簧处于初始位置上,需要打开桶盖时,施加外力作用到按压开关板的上表面,在按压开关板上作用向下的作用力时,按压开关板向下转动,带动压簧发生扭转直至活动螺钉与压簧扭转至安装孔的下端,压簧在外力作用下转换到第二种状态,桶盖打开至最大角度;当外力一旦除去,由于压簧的弹力作用,压簧带动活动螺钉偏移回原始位置,按压开关板就又回到初始位置,桶盖闭合。

[0015] 本实用新型的按键弹簧内置的垃圾桶开关结构能取代市场上已有的脚踏开关结构,轻易实现垃圾桶盖的开合,结构简单,紧凑,占用空间小,开关开合依靠压簧储存的能量,成本降低,且这个开合结构可单独进行更换,制造和维修大大简化,更加方便。

附图说明

[0016] 图1为垃圾桶的立体图;

[0017] 图2为垃圾桶的俯视图;

[0018] 图3为桶盖的分解图;

[0019] 图4为图3圆圈部分的放大图;

[0020] 图5为按键弹簧内置的垃圾桶开关结构的立体图;

[0021] 图6为按键弹簧内置的垃圾桶开关结构的主视图;

[0022] 图7为图4的A-A剖视图;

[0023] 图8为压簧、活动螺钉的分解图;

[0024] 图9为按键弹簧内置的垃圾桶开关结构的后视图;

[0025] 图10为按键弹簧内置的垃圾桶开关结构的仰视图;

[0026] 图11为按键弹簧内置的垃圾桶开关结构的侧视图。

[0027] 图中数字对应的零件名称为:

[0028] 1.垃圾桶;2.桶盖;3.按压开关板;4.卡合部;5.安装孔;6.活动螺钉;7.压簧;8.铰接孔;9.凸边;10轴栓。

具体实施方式

[0029] 下面结合附图和实施例对本发明作进一步说明。

[0030] 如图1和图2,按键弹簧内置的垃圾桶开关结构通过两根独立的轴栓10将所述开关结构安装于垃圾桶1上端边缘处,按压开关板3靠近桶盖2的一侧设有与桶盖2卡合的卡合部4,卡合部4的上表面为斜面,有利于桶盖2关闭时与开关结构卡合顺利且紧固;按压开关板3的内侧与垃圾桶1的上端边缘之间设有压簧7;按压开关板3的外表面为逐渐向垃圾桶侧面延伸的弧形面。

[0031] 如图3至图8,按压开关3的内侧上设有安装压簧7的安装孔5;还包括设于安装孔5内的活动螺钉6,安装孔5的内径大于活动螺钉6及压簧7的外径,活动螺钉6及压簧7可在其中进行小角度的偏转。

[0032] 所述压簧7套设于活动螺钉6上,活动螺钉6的下端抵在垃圾桶1上,且其下端表面为弧面,有利于活动螺钉6和压簧7在外力按压下偏转更加顺畅,活动螺钉6与垃圾桶1的抵触位置位于所述按压开关板3与垃圾桶铰接位置的外侧。

[0033] 垃圾桶1的上端设有两个用于安装按压开关板3的铰接孔8,所述按压开关板3通过两个“7”字形轴销10铰接于所述铰接孔8上,实现垃圾桶开关结构的拆卸。

[0034] 垃圾桶1的上端表面设有防污的凸边9,所述凸边9沿按压开关板3的内侧方向设置,防止在桶盖2打开时,灰尘或细小垃圾进入到垃圾桶1边缘和开关结构的缝隙。

[0035] 在桶盖2闭合时,压簧7处于初始自由状态的位置上;安装孔5的内径大于活动螺钉6的外径,当施加压力于所述开合结构的按压开关板3时,所述按压开关板3向下移位,带动位于其上的安装孔5向下移动,所述压簧7沿着所述安装孔5渐渐扭转变形直至活动螺钉6抵住安装孔的下端,对应的垃圾桶盖2的卡合结构在压力作用下打开并逐渐打开至最大角度。

[0036] 作用于按压开关板3上的压力消失时,所述压簧7由扭转变形的最大状态恢复为自由状态,在压簧7因扭转变形而储存的弹力作用下,活动螺钉6随着压簧5的复位而移位,活动螺钉6带动按压开关板3移位,桶盖2保持桶盖在打开状态。闭合桶盖时,在桶盖上施加一个向下的作用力,直至按压开关板3的卡合部4与桶盖2相互卡合。

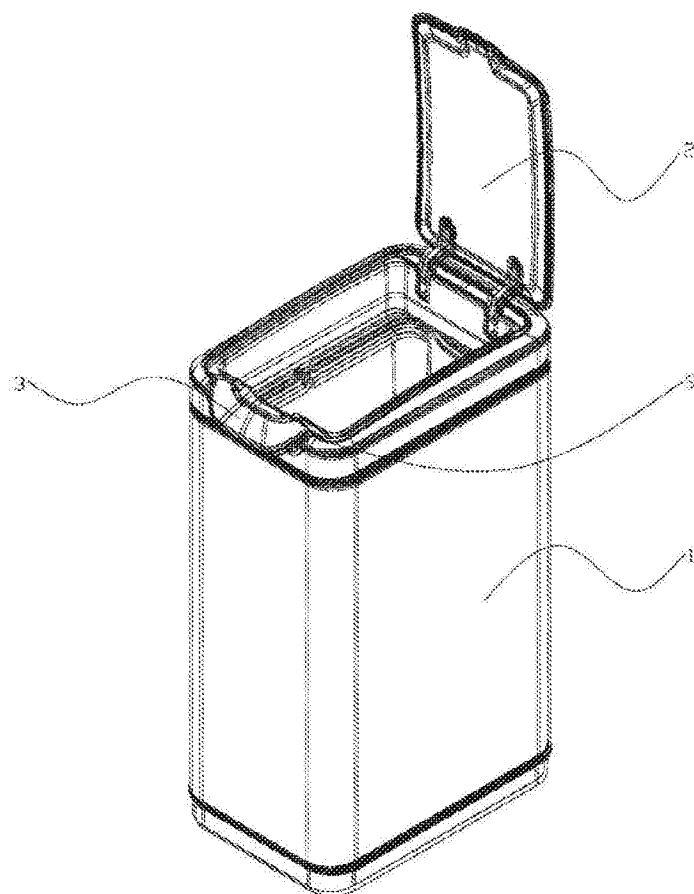


图1

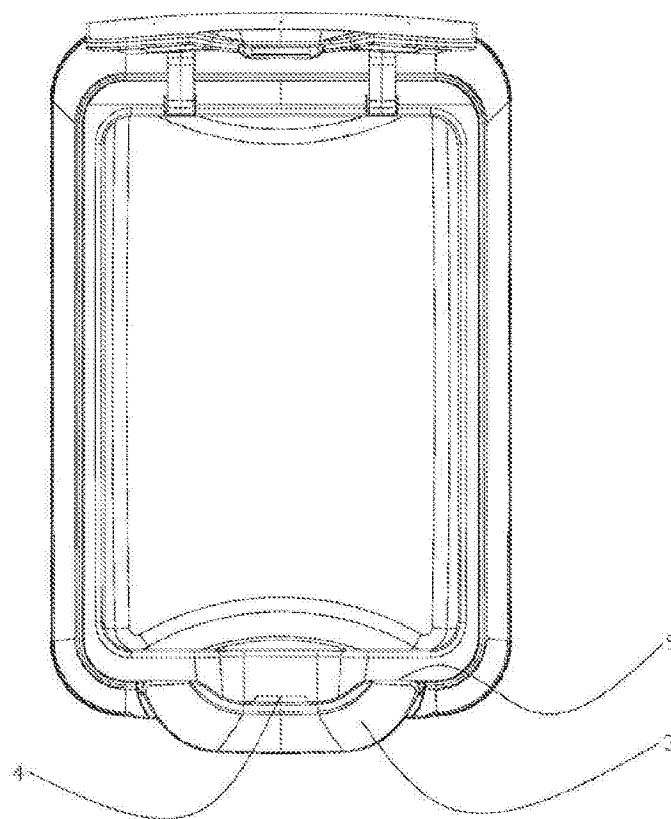


图2

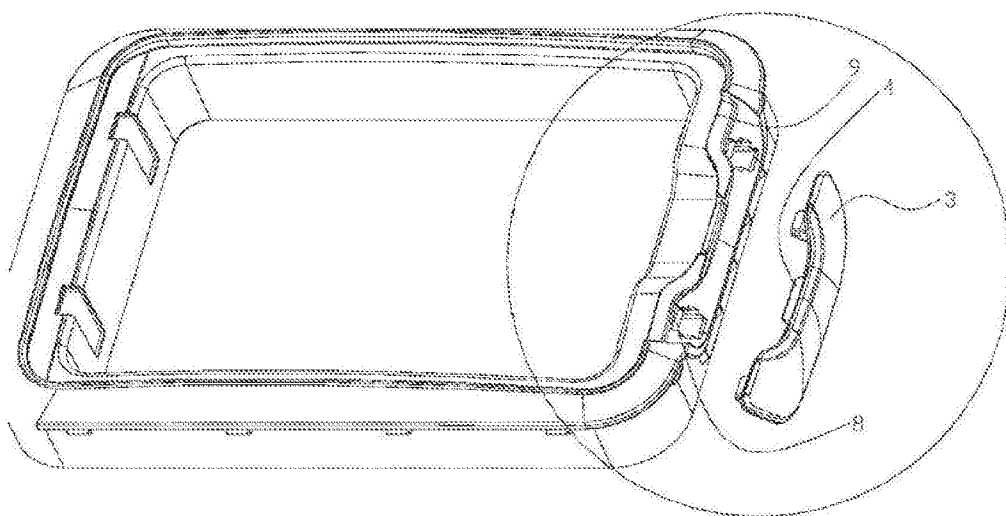


图3

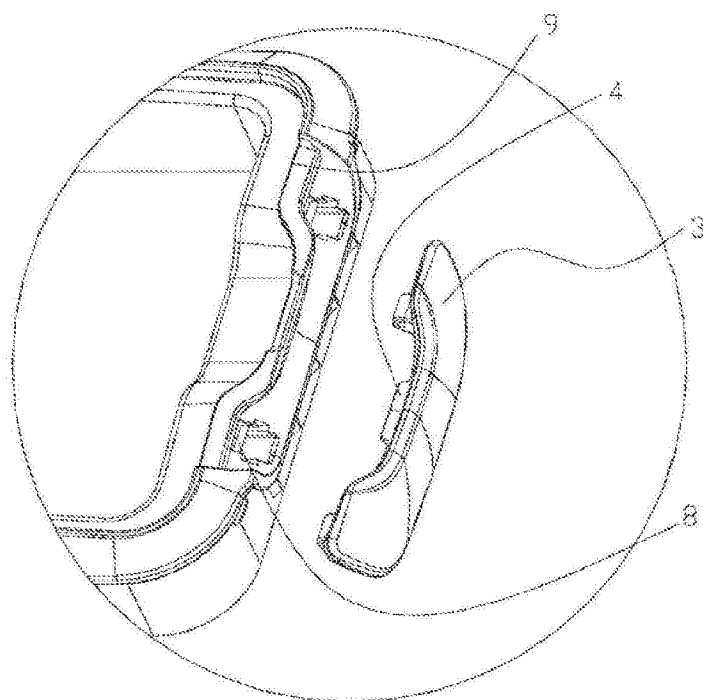


图4

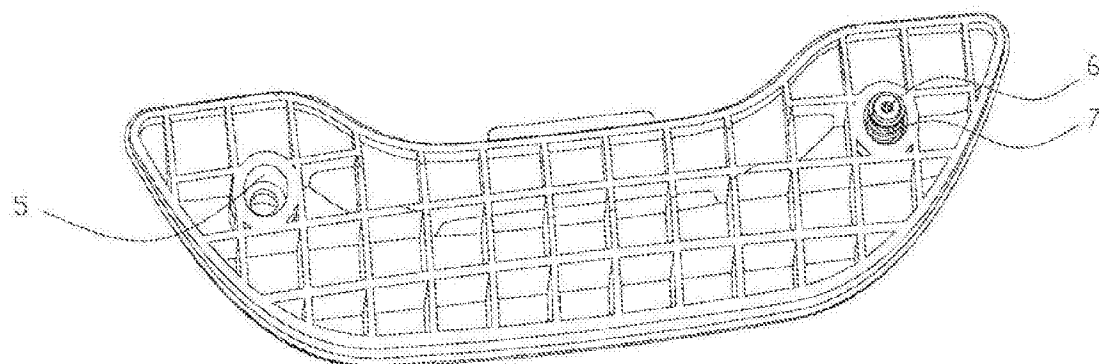


图5

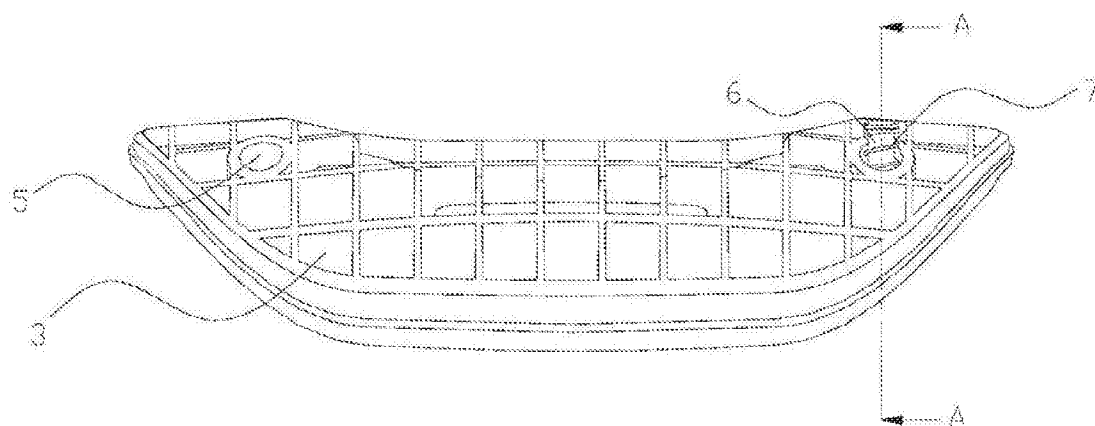


图6

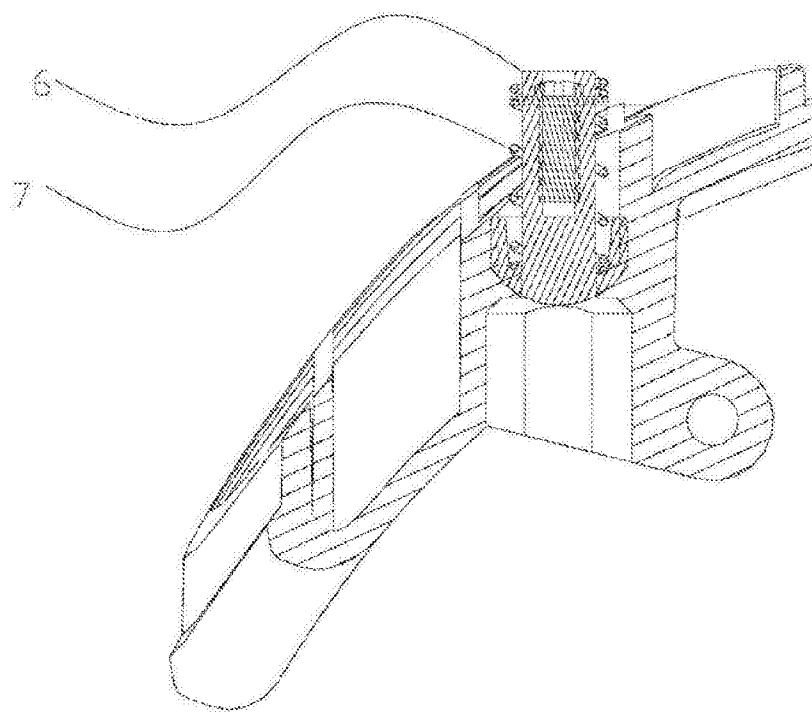


图7

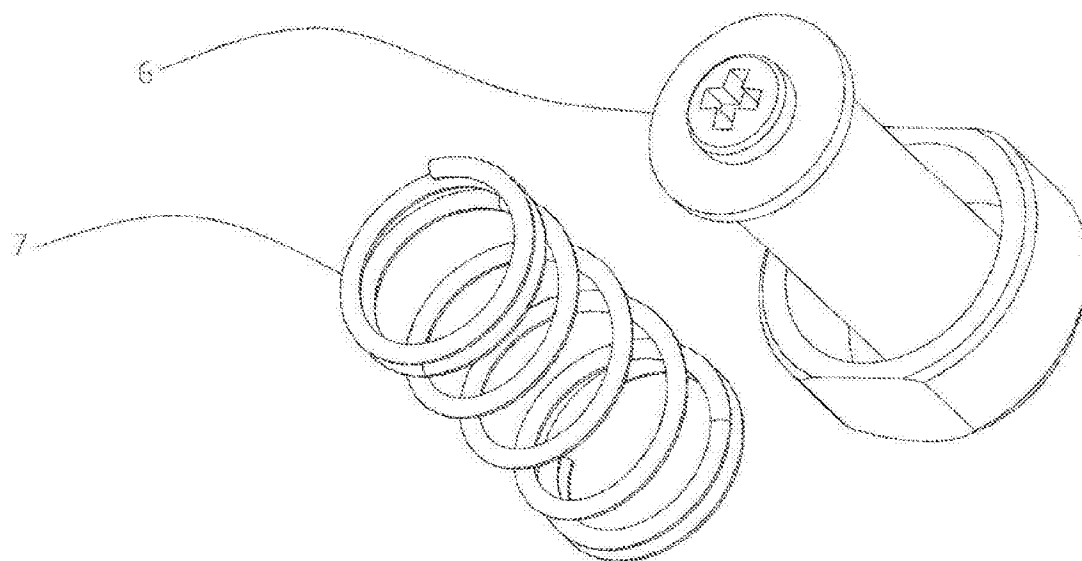


图8

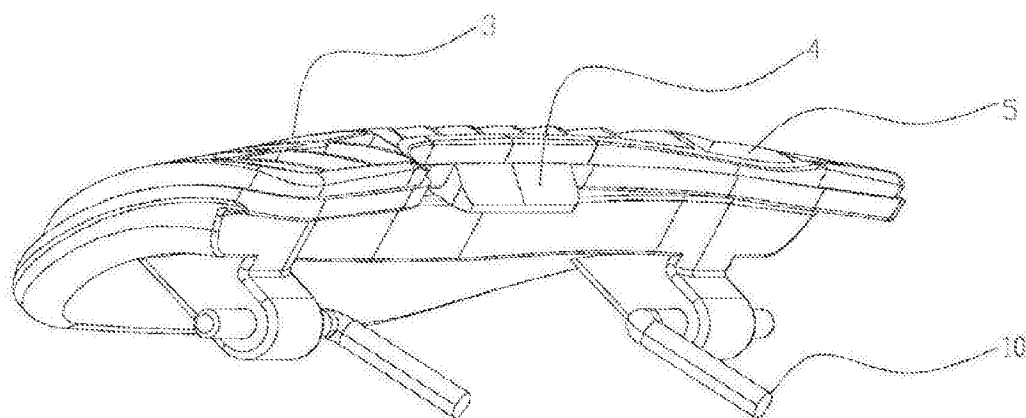


图9

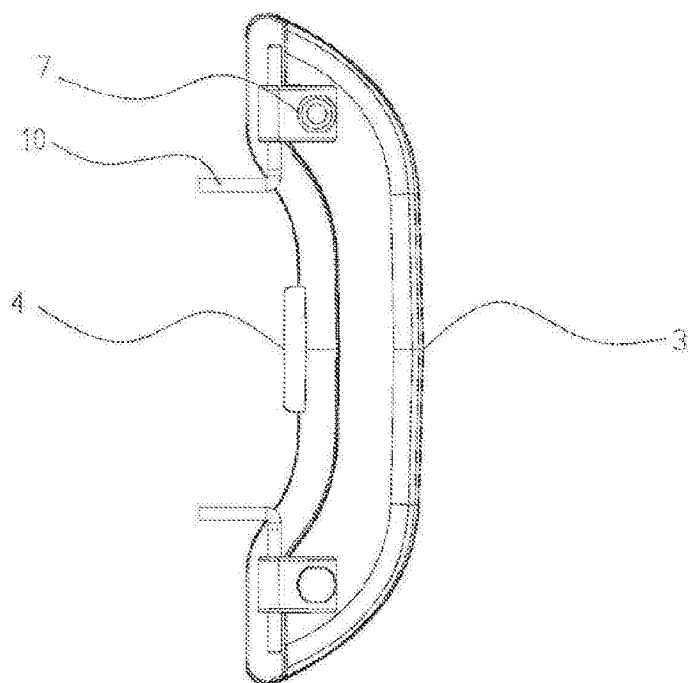


图10

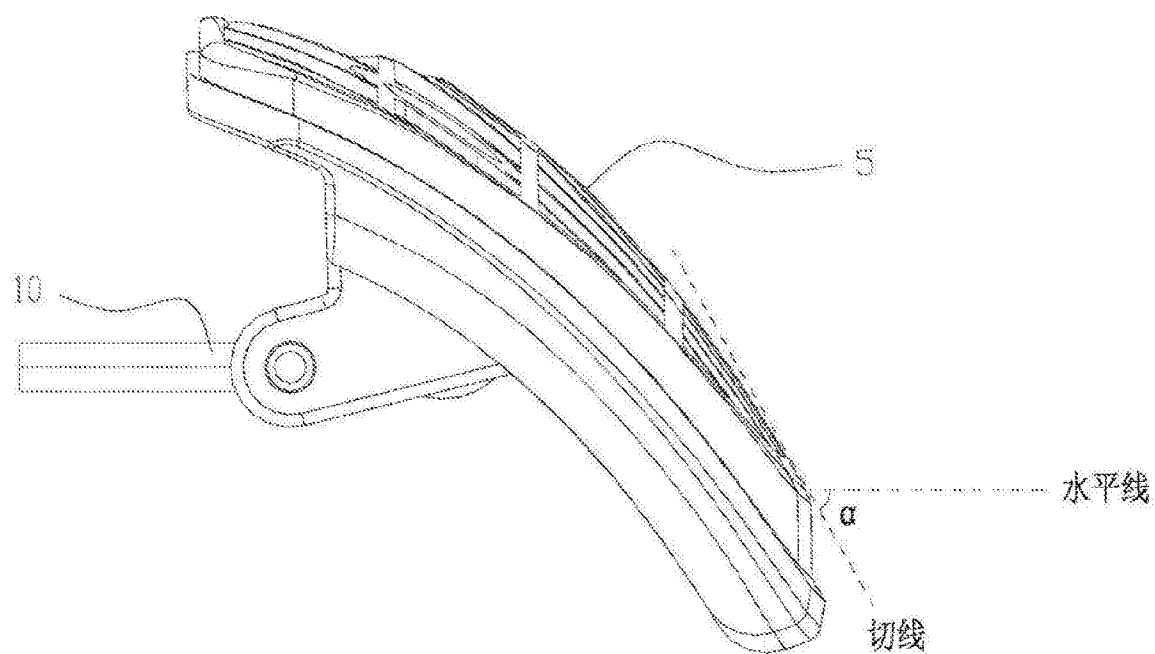


图11

(11)公告編號:183920

(44)中華民國81年(1992)05月11日

新 型

全 2 頁

(51)Int.Cl.⁵:B65F1/06

(54)名 稱:簡便型垃圾桶之組合結構改良

(21)申 請 案 號:81201406

(22)申請日期:中華民國81年(1992)01月30日

(72)創 作 人:
張志健

台北縣泰山鄉仁愛路六巷泰安新村十三號

(71)申 請 人:
張志健

台北縣泰山鄉仁愛路六巷泰安新村十三號

(74)代 理 人:鍾開榮 先生

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(57)申請專利範圍:

一種簡便型垃圾筒之組合結構改良，
主要由一蓋體、一上桶座，與一下桶座套
設而成，其主要特徵在於：

一活動開放式之蓋體，其中於蓋體側緣延
伸設一樞接部，可與上桶座之樞軸套合於
軸套者；

一頂端外緣設有樞軸與軸套之上桶座，且
其上桶座下端內緣設為內凹環，內凹環設
有四等距之凹部恰可與設於下桶座外凸環
之四個等距凸緣相嵌合者；

一底層為內凹之下桶座，其下桶座頂部兩
側設有兩片隔層網，中央部則設為置物空
間，可容置一般之抽取式塑膠垃圾袋，另
於隔層網同側之下桶座側邊底處設有兩圓
孔，以及兩柱塞，必要時可拔出柱塞沖洗
下桶座者。

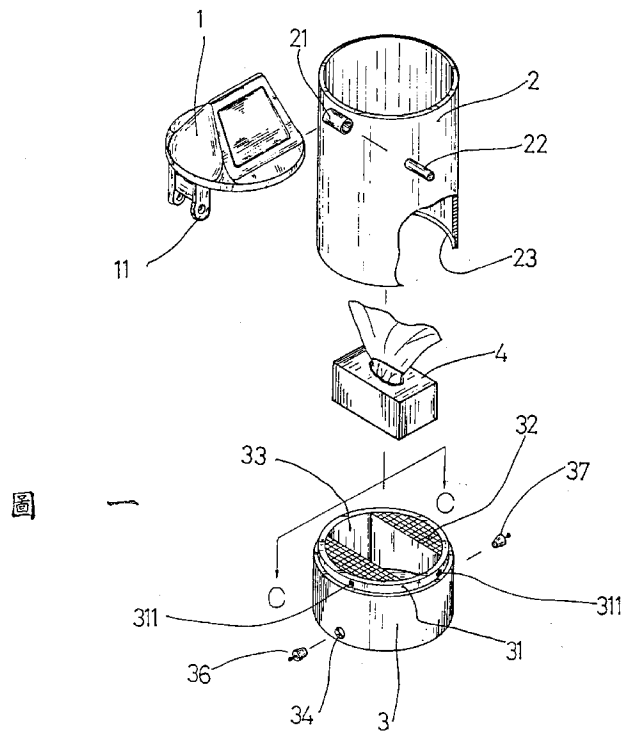
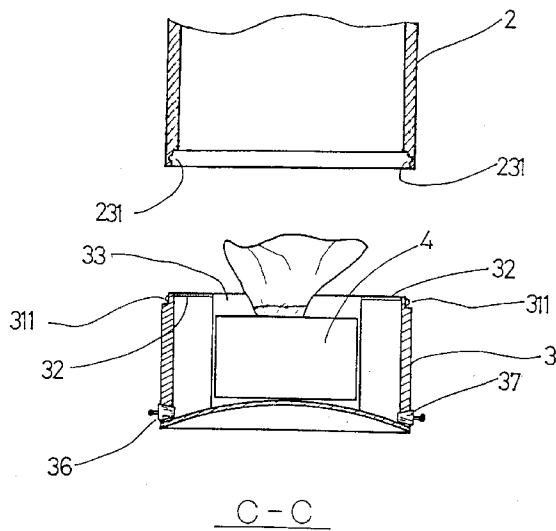
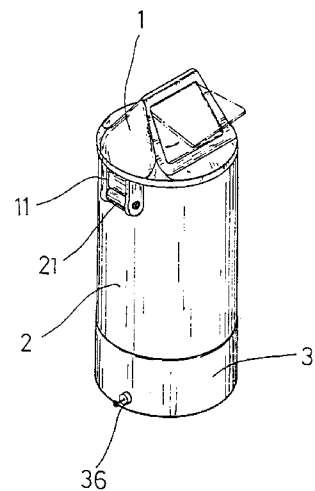
圖示簡單說明：

圖一為本創作之立體分解圖

圖二為本創作之部分剖面圖

圖三為本創作之組合立體圖

10.



中 華 民 國 專 利 公 報 (19) (12)

(11) 公告編號：230977

(44) 中華民國83年(1994)09月21日

新 型

全 4 頁

(51) Int. Cl. 5 : B65F1/06

(54) 名 稱：新穎垃圾桶

(21) 申 請 案 號：82207504

(22) 申請日期：中華民國82年(1993)05月31日

(72) 創 作 人：

張德逢
周金雀

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屏東縣潮州鎮太平路四十一號

(71) 申 請 人：

張德逢
周金雀

屏東縣竹田鄉頭崙村三山路三、四號
屏東縣潮州鎮太平路四十一號

(74) 代 理 人：蔡坤財 先生 康偉言 先生

1

2

[57]申請專利範圍：

1 一種新穎垃圾桶，其主要包含有一供
垃圾置放之容置空間的本體，以及一
設於本體周緣適當處之置物座等構件
；其中，置物座內部形成置物空間，
而得以置放垃圾袋捲筒，同時在於置
物座上開設一使置物空間與外部連通
之開口，並且該開口係與容置空間相
連通，以便垃圾袋可適時由置物座抽
取出，並套置於本體上使用。

2 依據申請專利範圍第1項所述之新穎
垃圾桶，其中，該置物座係可設置於
本體之底面處，而該容置空間之底部
係呈傾斜設置，且置物座之開口高度
亦高於底部高度者

3 依據申請專利範圍第1項所述之新穎
垃圾桶，其中，該開口上方亦從置物
座上延伸出一擋片者

4 依據申請專利範圍第1或2項所述之
新穎垃圾桶，其中，該本體上係可再
加設一蓋體者

5 依據申請專利範圍第4項所述之新穎

垃圾桶，其中，除該本體上係可再設
置有一封合結構，一設於封合結構上
之固接元件，一帶動封合結構作用之
連動結構，以及一可連動連動結構而
使封合結構產生夾合之作用板等構件
之外，同時亦可在蓋體上設有一凸塊
；藉以當作用板下壓時，可利用連動
結構之傳動，而使封合結構夾合，並
且該封合結構亦可頂推凸塊，構成蓋
體呈現打開狀態者

6 依據申請專利範圍第5項所述之新穎
垃圾桶，其中，該封合結構係由一樞
設於本體之擺臂，以及一對受擺臂連
動之夾片；其中，該任一夾片上成型
有凹槽，可供固接元件置放，且在夾
片夾持壓合狀態時，致使固接元件將
垃圾袋開口予以封合者

7 依據申請專利範圍第5項所述之新穎
垃圾桶，其中，該連動結構係由一連
桿，一由連桿底端處延伸且可受作用
板連動之按壓桿，以及一兩端分別接

(2)

3

合於本體 連桿之彈性元件等構件組成；其中，該彈性元件可適時的隨連桿位置下降，而產生一拉伸之作用力，進而當連桿所接受之作用外力消失後，該連桿即會因彈性元件所產生的彈性回復力，而使連桿回歸至原來位置。

圖示簡單說明：

第一圖所示係本創作第一可行實施例之立體分解圖。

第二圖所示係本創作第一可行實施例之剖視圖。

第三圖所示係本創作第二可行實

4

施例之立體分解圖

第四圖所示係本創作第二可行實施例之剖視圖

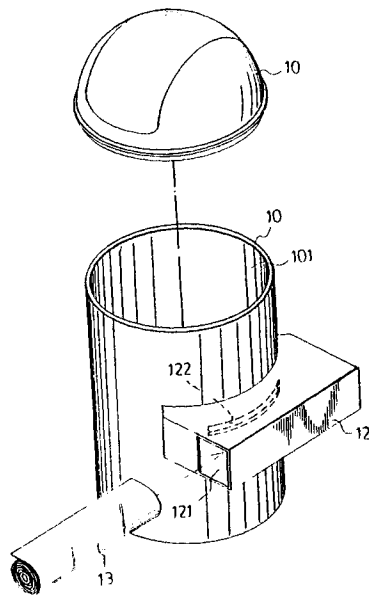
第五圖所示係本創作第三可行實施例之剖視圖

第六圖所示係本創作第四可行實施例之俯視圖

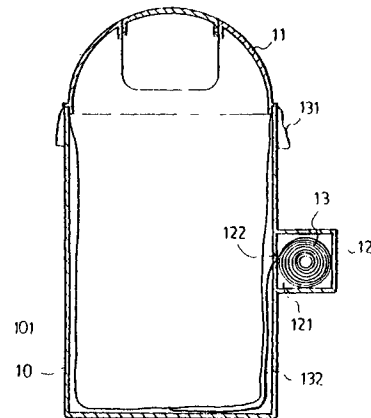
第七圖所示係本創作第四可行實施例之側視圖

第八圖所示係本創作第四可行實施例之使用狀態圖

第九圖所示係本創作第五可行實施例之側視圖

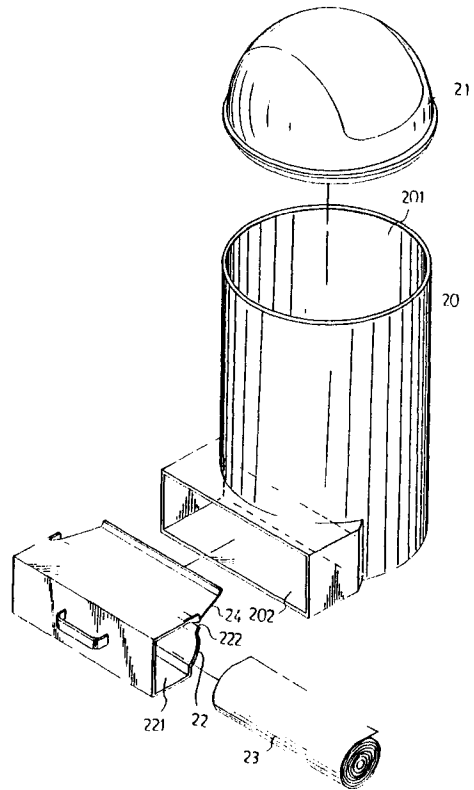


第一圖

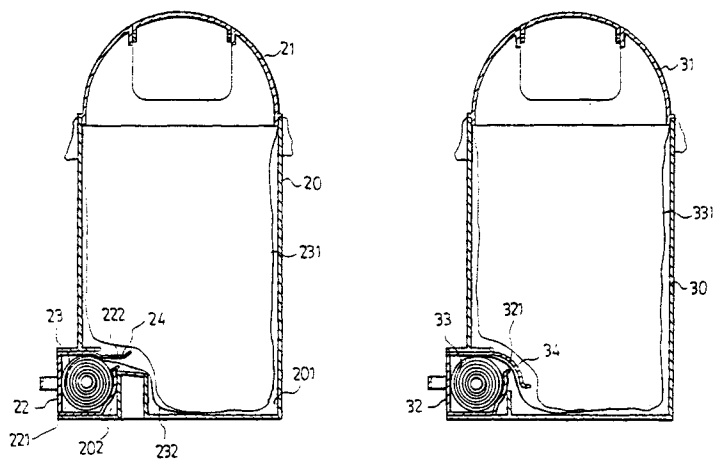


第二圖

(3)



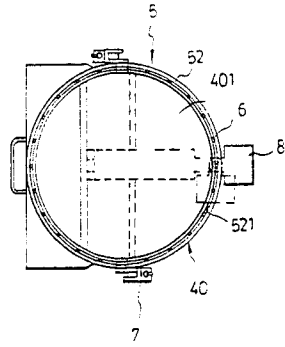
第三圖



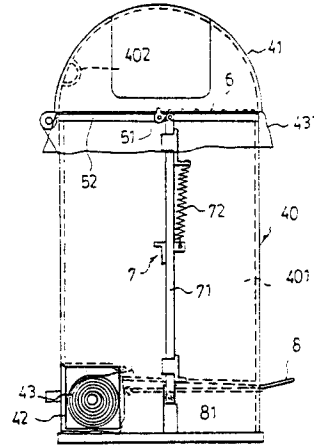
第四圖

第五圖

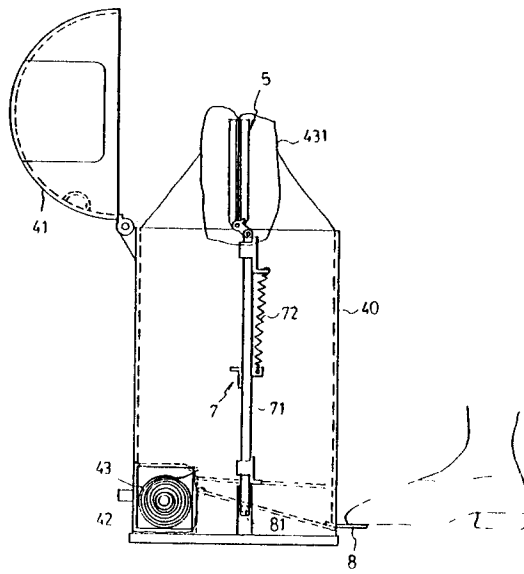
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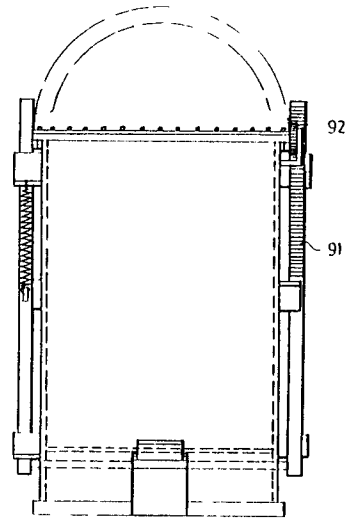
第六圖



第七圖



第八圖



第九圖

[11]公告編號：395392

[44]中華民國 89年 (2000) 06月 21日

新型

全 2 頁

[51] Int.Cl⁰⁶: B65F1/06

[54]名稱：具抽取式垃圾袋之垃圾桶結構

[21]申請案號：087219669

[22]申請日期：中華民國 87年 (1998) 11月 26日

[72]創作人：

陳鑫炕

彰化縣秀水鄉福安村村西巷八十號

[71]申請人：

陳鑫炕

彰化縣秀水鄉福安村村西巷八十號

[74]代理人：

1

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[57]申請專利範圍：

本創作具抽取式垃圾袋之垃圾桶結構，其係將具有多點接縫處之垃圾袋包裝（如：捲筒型垃圾袋2及盒裝型垃圾袋3各式包裝）裝入垃圾桶之ㄠ形體底下，將垃圾袋穿過長形穿孔，而後蓋闔住底蓋，即可抽取使用；使用時，垃圾袋常因尖硬物而有小破洞產生，則垃圾袋中污水將流漏出，其污水將隨兩斜板往兩側集中，避免污水經長形穿孔流入垃圾袋包裝中之功效者；其主要結構特徵在於：

該垃圾桶，其為圓形狀，亦可設計成橢圓形、方形造型，於底部設置兩斜片，成一ㄠ形體，並於其中間開一長形穿

孔，且於兩斜片下方適當處，設置一環形凹槽，供底蓋卡合定位之功能者；

該底蓋，其形狀與垃圾桶相配合，於蓋上設置一凸緣體，於緣體外側設置一環形凸條，供與環形凹槽相互卡合。

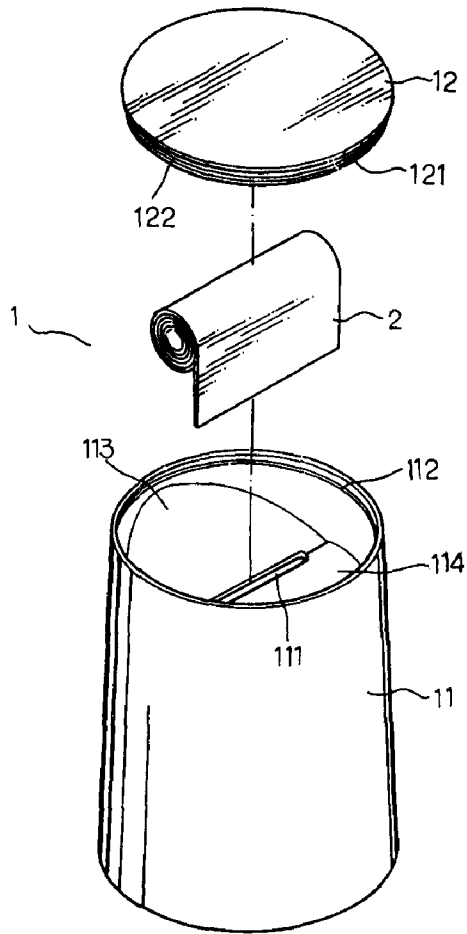
圖式簡單說明：

第一圖：係本創作之立體分解圖。

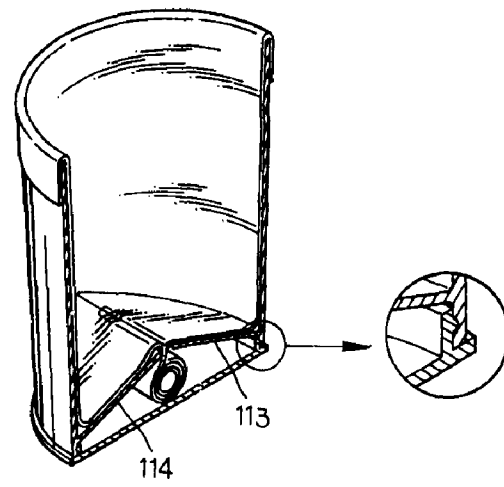
第二圖：係本創作實施相關位置示意圖。

第三圖：係本創作之組合立體剖面圖。

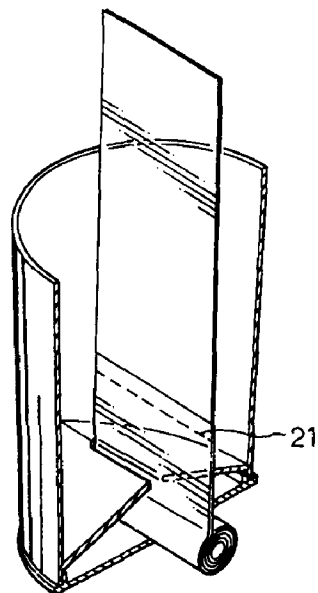
第四圖：係本創作之另一實施立體圖。



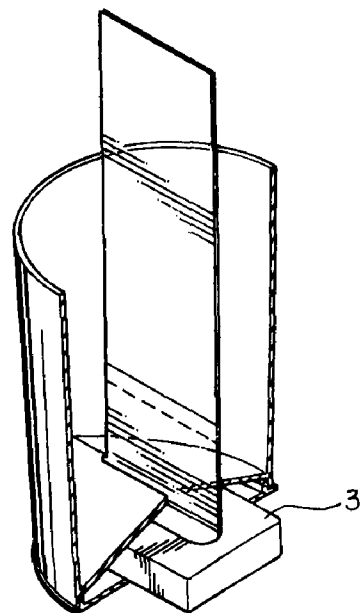
第一圖



第二圖



第三圖



第四圖

【19】 中華民國 **【12】 專利公報 (S)**

【11】 證書號數：D145989

【45】 公告日：中華民國 101 (2012) 年 03 月 21 日

【51】 LOC. (8) Cl.：09-09

新式樣

全8 頁

【54】 名 稱：垃圾筒

TRASH CAN

【21】 申請案號：099304572

【22】 申請日：中華民國 99 (2010) 年 09 月 10 日

【30】 優先權：2010/03/12

美國

29/357,561

【72】 創作人：楊紹培 (US) YANG, FRANK；魏孜浩 (US) WEI, TZU-HAO；張狄風 (TW) CHANG, DI FONG；黃波林 (TW) HUANG, PO LING；林 麥克 (US) LUM, MYK；蘇基摩托肯 (JP) SUGIMOTO, KEN

【71】 申請人：簡單人類有限責任公司
美國

SIMPLEHUMAN LLC

【74】 代理人：江孟貞

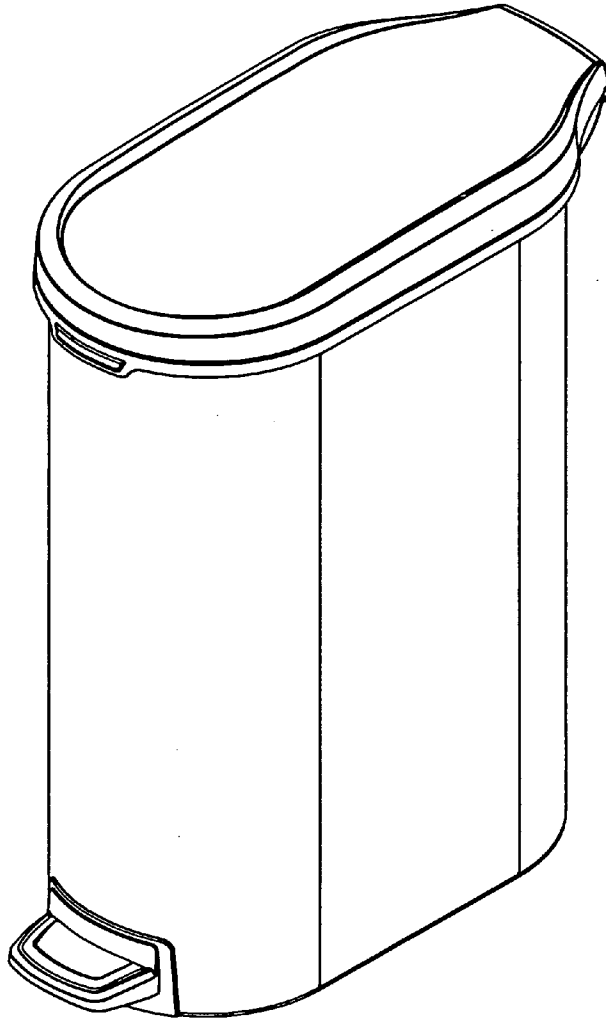
【56】 參考文獻：

TW D130056

US D578268

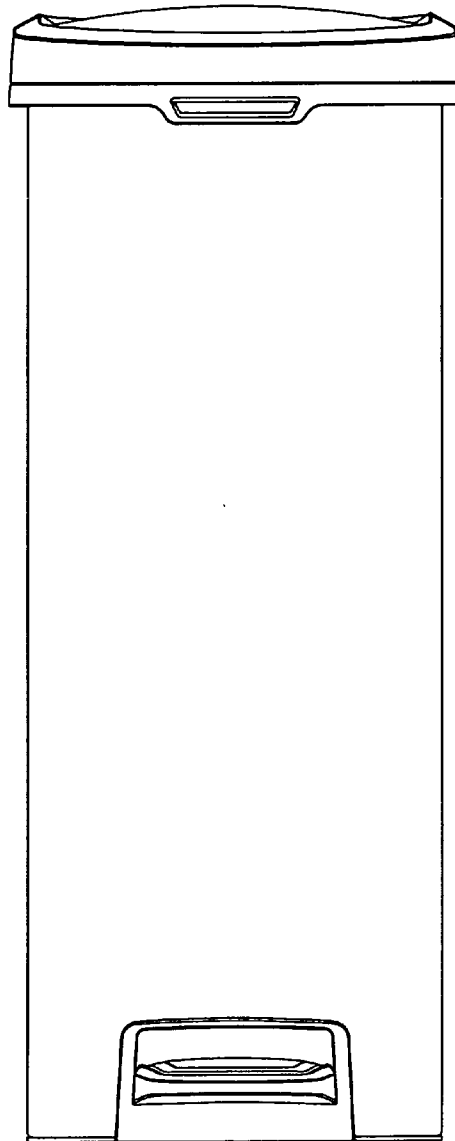
審查人員：陳慧媛

(2)



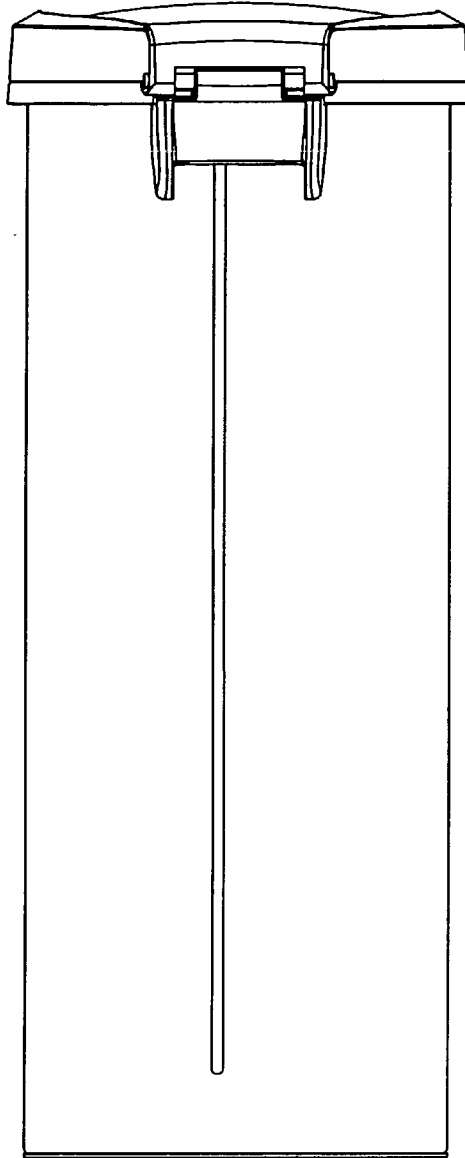
立體圖(代表圖)

(3)



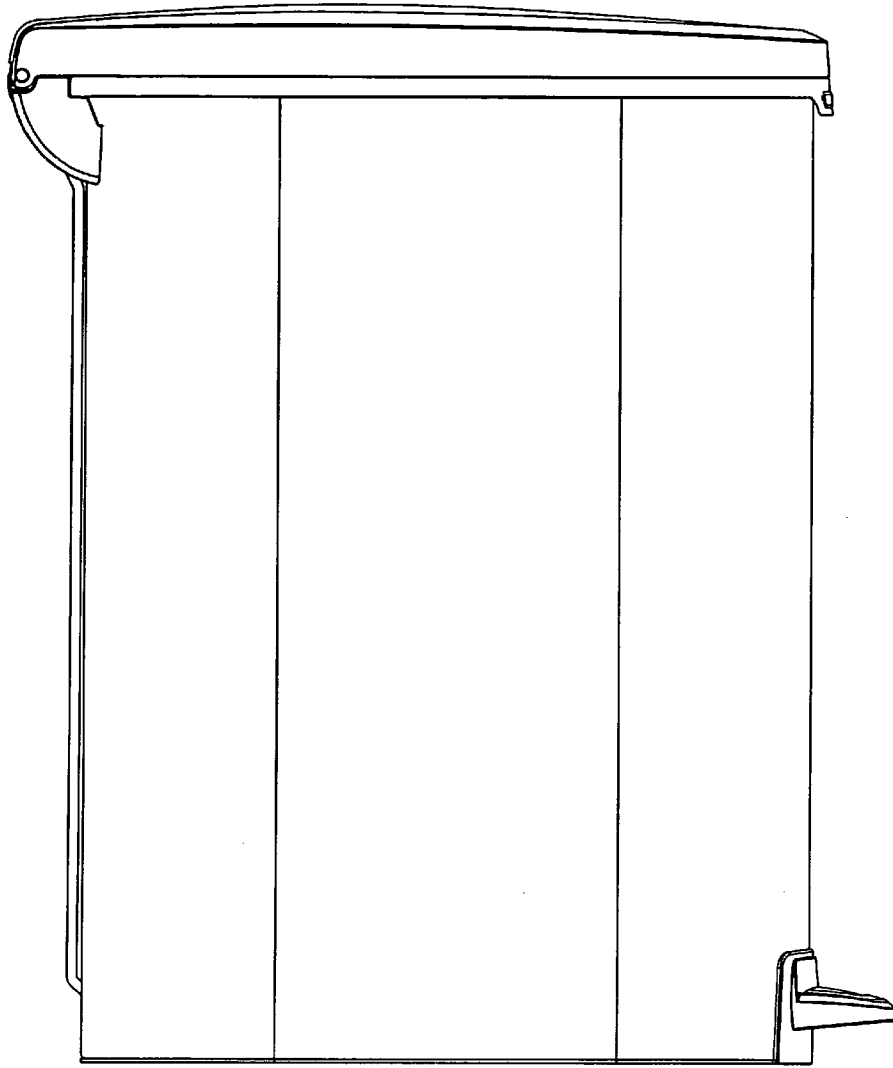
前視圖

(4)



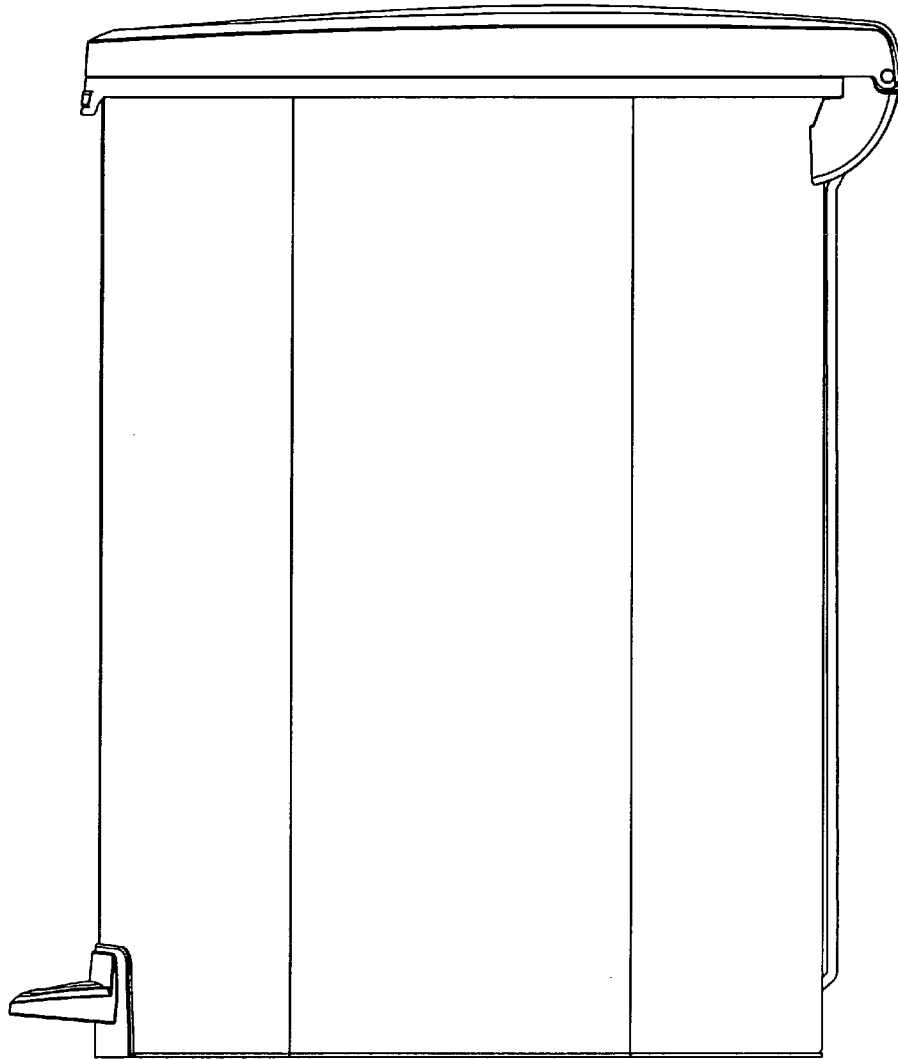
後視圖

(5)



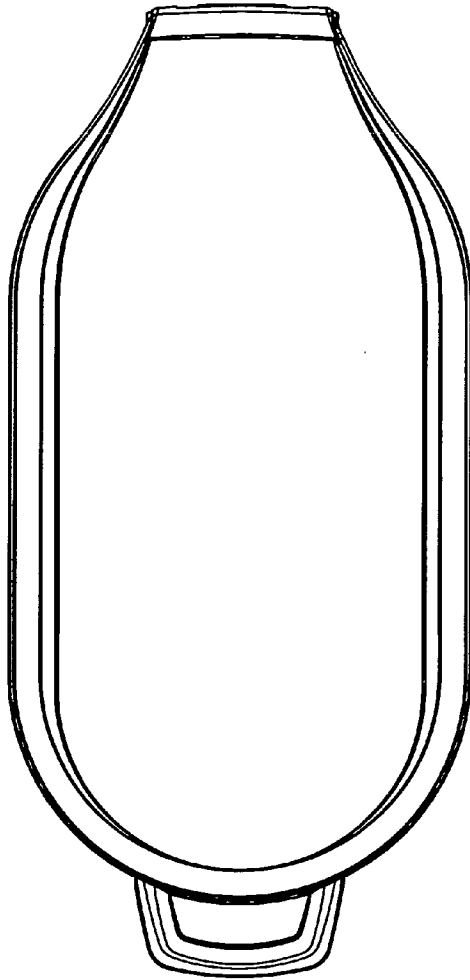
左側視圖

(6)



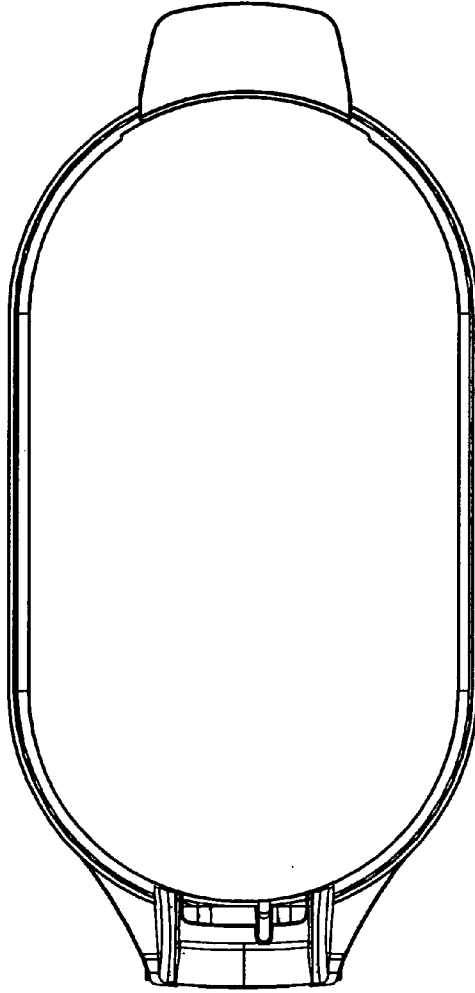
右側視圖

(7)



俯視圖

(8)



仰視圖

【19】 中華民國

【12】 專利公報 (S)

【11】 證書號數：D162495

【45】 公告日：中華民國 103 (2014) 年 08 月 21 日

【51】 LOC. (9) Cl.：09-09

設計

全7 頁

【54】 名 稱：垃圾筒

TRASH CAN

【21】 申請案號：102305815

【22】 申請日：中華民國 102 (2013) 年 08 月 30 日

【30】 優先權：2013/03/01

美國

29/447,336

【72】 設計人：楊紹培 (US) YANG, FRANK；張狄風 (TW) CHANG, DI FONG；林 麥克 (US) LUM, MYK；偉德 亞當 (US) WADE, ADAM；黃柏霖 (TW) HUANG, PO LING

【71】 申請人：簡單人類有限責任公司
美國

SIMPLEHUMAN LLC

【74】 代理人：李宗德

【56】 參考文獻：

TW D145989

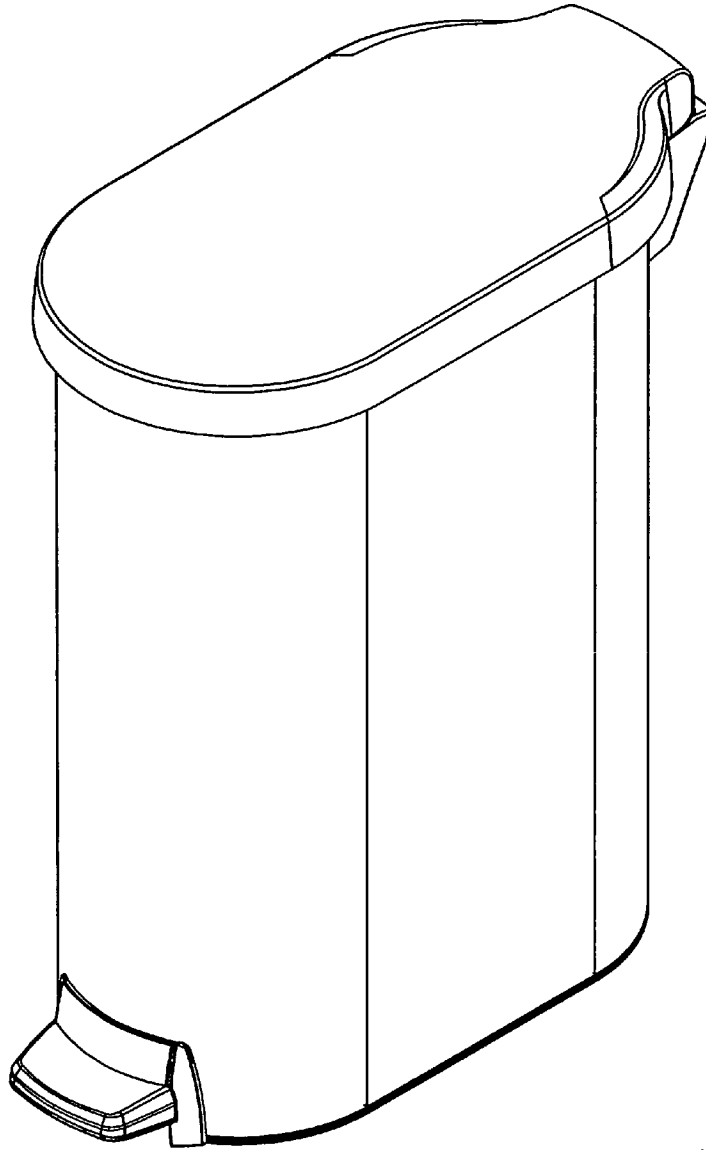
US D632039

審查人員：陳慧媛

設計說明

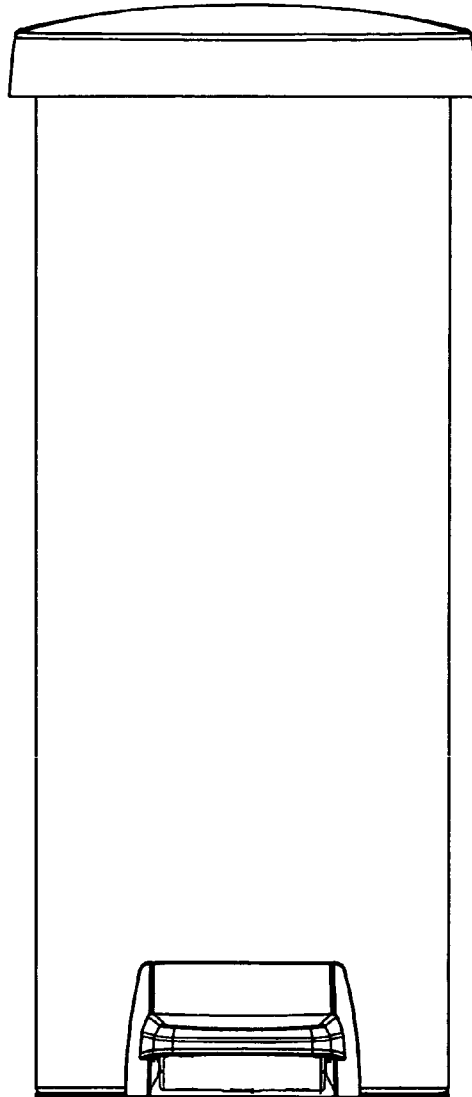
左側視圖與右側視圖對稱，故省略左側視圖。

(2)



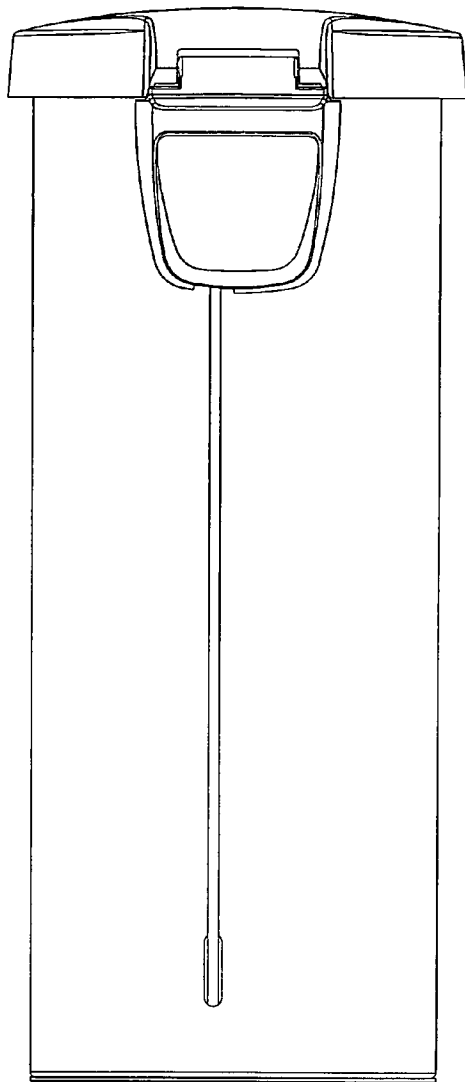
立體圖(代表圖)

(3)



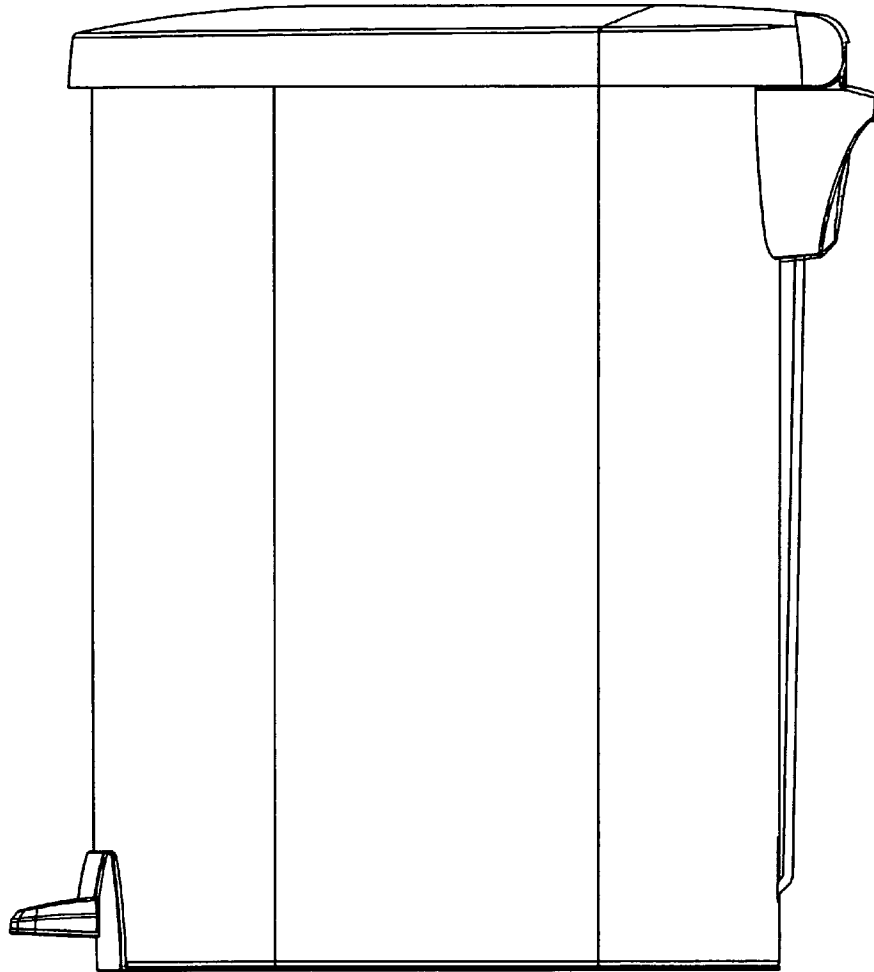
前視圖

(4)



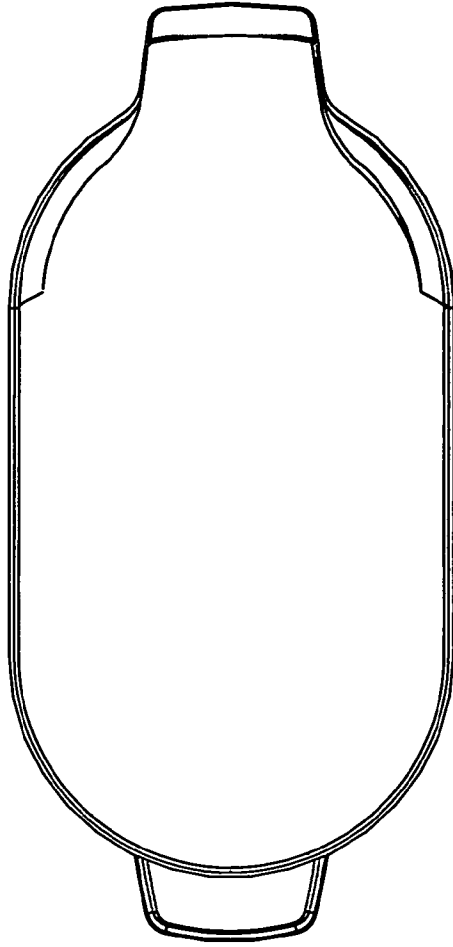
後視圖

(5)



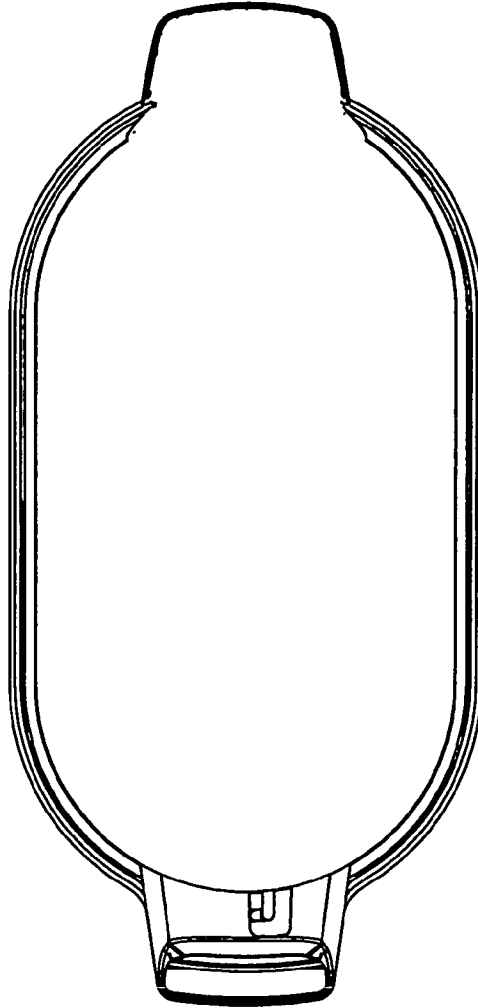
右側視圖

(6)



俯視圖

(7)



仰視圖

INFORMATION DISCLOSURE STATEMENT BY APPLICANT	Application No.	15/783,370
	Filing Date	October 13, 2017
	First Named Inventor	Frank Yang
	Art Unit	2837
(Multiple sheets used when necessary)	Examiner	David S. Luo
SHEET 1 OF 2	Attorney Docket No.	SHUMAN.122C1

U.S. PATENT DOCUMENTS					
Examiner Initials	Cite No.	Document Number Number - Kind Code (if known) Example: 1,234,567 B1	Publication Date MM-DD-YYYY	Name	Pages, Columns, Lines Where Relevant Passages or Relevant Figures Appear
	1	6,612,099	09-02-2003	Stravitz	
	2	6,785,912	09-07-2004	Julio	
	3	8,393,489	03-12-2013	Stravitz	
	4	10,472,170 and its entire file history (Atty. Docket No. SHUMAN.192P1C1)	11-12-2019	Yang et al.	
	5	10,494,175 and its entire file history (Atty. Docket No. SHUMAN.202A)	12-03-2019	Yang et al.	
	6	D632,039	02-01-2011	Yang et al.	
	7	D758,686	06-07-2016	Beumer	
	8	D820,544	06-12-2018	Joseph	
	9	D825,876	08-14-2018	Chen	
	10	D830,029	10-02-2018	Greenspoon et al.	
	11	D858,024 (Atty. Docket No. SHUMAN.229DA)	08-27-2019	Yang et al.	
	12	D858,923 (Atty. Docket No. SHUMAN.228DA)	09-03-2019	Yang et al.	
	13	2002/0100758	08-01-2002	Pyles	
	14	2004/0028572	02-12-2004	Sham et al.	
	15	2004/0250711	12-16-2004	Ernst	
	16	2009/0071959	03-19-2009	Cheung	
	17	2010/0178105	07-15-2010	Monneret	
	18	2010/0193518	08-05-2010	Tontarelli	
	19	2013/0048641	02-28-2013	Romano	
	20	2016/0200508	07-14-2016	Thoma et al.	
	21	2017/0050404	02-23-2017	Henken et al.	
	22	2019/0077595	03-14-2019	Wang et al.	
	23	2019/0185263 and its entire file history (Atty. Docket No. SHUMAN.153D1)	06-20-2019	Yang et al.	
	24	2019/0276232 and its entire file history (Atty. Docket No. SHUMAN.225A)	09-12-2019	Yang et al.	

Examiner Signature	Date Considered
*Examiner: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT	Application No.	15/783,370
	Filing Date	October 13, 2017
	First Named Inventor	Frank Yang
	Art Unit	2837
(Multiple sheets used when necessary)	Examiner	David S. Luo
SHEET 2 OF 2	Attorney Docket No.	SHUMAN.122C1

FOREIGN PATENT DOCUMENTS						
Examiner Initials	Cite No.	Foreign Patent Document Country Code-Number-Kind Code Example: JP 1234567 A1	Publication Date MM-DD-YYYY	Name	Pages, Columns, Lines Where Relevant Passages or Relevant Figures Appear	T ¹
	25	CA 2182840	09-26-1997	Tucker Housewares		
	26	CA 2695086	09-06-2010	simplehuman, LLC		
	27	CN 101177946 A	05-14-2008	Norinco Co		X-abstract
	28	CN 201372076 Y	12-30-2009	Zhang		X-abstract
	29	CN 201447201 U	05-05-2010	Lin		X-abstract
	30	CN 201597962 U	10-06-2010	Jiangmen Huijie Plastic Hardware Manufacturing Co., Ltd.		X-machine translation
	31	CN 103207416 A	07-17-2013	Chen		X-abstract
	32	CN 103303618 A	09-18-2013	simplehuman, LLC		X-abstract
	33	CN 205169479 U	04-20-2016	Chen		X-abstract
	34	TW 183920	05-11-1992			
	35	TW 230977	09-21-1994	Chang et al.		
	36	TW 395392	06-21-2000	Chen		
	37	TW 145989	03-21-2012	simplehuman, LLC		
	38	TW D162495	08-21-2014	simplehuman, LLC		

NON PATENT LITERATURE DOCUMENTS			
Examiner Initials	Cite No.	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T ¹
	39	Web page showing picture of Hero Bullet trash can, archived November 17, 2004, downloaded from http://web.archive.org/web/20041117003115/http://www.simplehuman.com/images/hero_bullet.jpg	
	40	Office Action for European Application No. 13158229.8, dated July 12, 2018, in 5 pages (Atty. Docket No. SHUMAN.122EP)	
	41	Office Action for European Application No. 13158229.8, dated June 27, 2019, in 5 pages (Atty. Docket No. SHUMAN.122EP)	

31655191

Examiner Signature	Date Considered
*Examiner: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.	

INFORMATION DISCLOSURE STATEMENT

First Inventor :	Frank Yang
App. No. :	15/783,370
Filed :	October 13, 2017
For :	TRASH CAN ASSEMBLY
Examiner :	David S. Luo
Art Unit :	2837
Conf. No. :	6434

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

References and Listing

An Information Disclosure Statement (IDS) listing references is provided herewith. To the extent that anything in the IDS or the listed references could be construed as a disclaimer of any subject matter supported by the present application, Applicant hereby rescinds and retracts such disclaimer. Some of the foreign references include English abstracts and/or machine translations, but no representation is made as to their accuracy.

Certain Commonly-Owned References

The owner of the above-indicated application is also believed to own the patent application publications listed as at least Cite Nos. 4-6, 11, 12, 23, and 24. Those documents or their associated prosecution histories may contain office actions, attorney arguments, allowed claims or indications of allowable subject matter, and cited references that the Examiner may consider to be relevant and/or material to the present application. In addition, as some of these applications may still be pending, future office actions, attorney arguments, notices of allowance, and cited references may be included in these files. Applicant understands that the Examiner has access to these files on a continuing basis, including any present or future office actions, attorney arguments, allowed claims or indications of allowable subject matter, or cited references listed therein, for review if the Examiner feels these documents are in any way relevant or material to the examination of the present claims. If, however, the Examiner does not have access to these

files or would like Applicant to provide copies of any office actions, attorney arguments, allowed claims or indication of allowable subject matter, or cited references, the Examiner is requested to contact the undersigned at the below-listed phone number or at the address of record.

Timing of Disclosure

This IDS is being filed within three months of the filing date or date of national phase entry, with an RCE or before receipt of a First Office Action after an RCE, and no fee is believed to be required.

The Commissioner is hereby authorized to charge any additional fees that may be required, or credit any overpayment, to Account No. 11-1410.

Respectfully submitted,

KNOBBE, MARTENS, OLSON & BEAR, LLP

Dated: January 10, 2020

By: Jason R. Swartz/

Jason Swartz
Registration No. 64,420
Registered Practitioner
(949) 760-0404

31996082



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

NOTICE OF ALLOWANCE AND FEE(S) DUE

20995 7590 02/12/2020
KNOBBE MARTENS OLSON & BEAR LLP
2040 MAIN STREET
FOURTEENTH FLOOR
IRVINE, CA 92614

EXAMINER

LUO, DAVID S

ART UNIT

PAPER NUMBER

2837

DATE MAILED: 02/12/2020

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
15/783,370	10/13/2017	Frank Yang	SHUMAN.122C1	6434

TITLE OF INVENTION: TRASH CAN ASSEMBLY

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	SMALL	\$500	\$0.00	\$0.00	\$500	05/12/2020

THE APPLICATION IDENTIFIED ABOVE HAS BEEN EXAMINED AND IS ALLOWED FOR ISSUANCE AS A PATENT. PROSECUTION ON THE MERITS IS CLOSED. THIS NOTICE OF ALLOWANCE IS NOT A GRANT OF PATENT RIGHTS. THIS APPLICATION IS SUBJECT TO WITHDRAWAL FROM ISSUE AT THE INITIATIVE OF THE OFFICE OR UPON PETITION BY THE APPLICANT. SEE 37 CFR 1.313 AND MPEP 1308.

THE ISSUE FEE AND PUBLICATION FEE (IF REQUIRED) MUST BE PAID WITHIN THREE MONTHS FROM THE MAILING DATE OF THIS NOTICE OR THIS APPLICATION SHALL BE REGARDED AS ABANDONED. THIS STATUTORY PERIOD CANNOT BE EXTENDED. SEE 35 U.S.C. 151. THE ISSUE FEE DUE INDICATED ABOVE DOES NOT REFLECT A CREDIT FOR ANY PREVIOUSLY PAID ISSUE FEE IN THIS APPLICATION. IF AN ISSUE FEE HAS PREVIOUSLY BEEN PAID IN THIS APPLICATION (AS SHOWN ABOVE), THE RETURN OF PART B OF THIS FORM WILL BE CONSIDERED A REQUEST TO REAPPLY THE PREVIOUSLY PAID ISSUE FEE TOWARD THE ISSUE FEE NOW DUE.

HOW TO REPLY TO THIS NOTICE:

I. Review the ENTITY STATUS shown above. If the ENTITY STATUS is shown as SMALL or MICRO, verify whether entitlement to that entity status still applies.

If the ENTITY STATUS is the same as shown above, pay the TOTAL FEE(S) DUE shown above.

If the ENTITY STATUS is changed from that shown above, on PART B - FEE(S) TRANSMITTAL, complete section number 5 titled "Change in Entity Status (from status indicated above)".

For purposes of this notice, small entity fees are 1/2 the amount of undiscounted fees, and micro entity fees are 1/2 the amount of small entity fees.

II. PART B - FEE(S) TRANSMITTAL, or its equivalent, must be completed and returned to the United States Patent and Trademark Office (USPTO) with your ISSUE FEE and PUBLICATION FEE (if required). If you are charging the fee(s) to your deposit account, section "4b" of Part B - Fee(s) Transmittal should be completed and an extra copy of the form should be submitted. If an equivalent of Part B is filed, a request to reapply a previously paid issue fee must be clearly made, and delays in processing may occur due to the difficulty in recognizing the paper as an equivalent of Part B.

III. All communications regarding this application must give the application number. Please direct all communications prior to issuance to Mail Stop ISSUE FEE unless advised to the contrary.

IMPORTANT REMINDER: Maintenance fees are due in utility patents issuing on applications filed on or after Dec. 12, 1980. It is patentee's responsibility to ensure timely payment of maintenance fees when due. More information is available at www.uspto.gov/PatentMaintenanceFees.

PART B - FEE(S) TRANSMITTAL

Complete and send this form, together with applicable fee(s), by mail or fax, or via EFS-Web.

By mail, send to: Mail Stop ISSUE FEE
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

By fax, send to: (571)-273-2885

INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

CURRENT CORRESPONDENCE ADDRESS (Note: Use Block 1 for any change of address)

Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

20995 7590 02/12/2020
KNOBBE MARTENS OLSON & BEAR LLP
2040 MAIN STREET
FOURTEENTH FLOOR
IRVINE, CA 92614

Certificate of Mailing or Transmission

I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being transmitted to the USPTO via EFS-Web or by facsimile to (571) 273-2885, on the date below.

(Typed or printed name)
(Signature)
(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
15/783,370	10/13/2017	Frank Yang	SHUMAN.122C1	6434

TITLE OF INVENTION: TRASH CAN ASSEMBLY

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	SMALL	\$500	\$0.00	\$0.00	\$500	05/12/2020

EXAMINER	ART UNIT	CLASS-SUBCLASS
LUO, DAVID S	2837	318-003000

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).

☐ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.

☐ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-09 or more recent) attached. **Use of a Customer Number is required.**

2. For printing on the patent front page, list

(1) The names of up to 3 registered patent attorneys or agents OR, alternatively,

1 _____

(2) The name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed.

2 _____

3 _____

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document must have been previously recorded, or filed for recordation, as set forth in 37 CFR 3.11 and 37 CFR 3.81(a). Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE

(B) RESIDENCE: (CITY and STATE OR COUNTRY)

Please check the appropriate assignee category or categories (will not be printed on the patent) : ☐ Individual ☐ Corporation or other private group entity ☐ Government

4a. Fees submitted: ☐ Issue Fee ☐ Publication Fee (if required) ☐ Advance Order - # of Copies _____

4b. Method of Payment: (Please first reapply any previously paid fee shown above)

☐ Electronic Payment via EFS-Web ☐ Enclosed check ☐ Non-electronic payment by credit card (Attach form PTO-2038)

☐ The Director is hereby authorized to charge the required fee(s), any deficiency, or credit any overpayment to Deposit Account No. _____

5. Change in Entity Status (from status indicated above)

☐ Applicant certifying micro entity status. See 37 CFR 1.29

☐ Applicant asserting small entity status. See 37 CFR 1.27

☐ Applicant changing to regular undiscounted fee status.

NOTE: Absent a valid certification of Micro Entity Status (see forms PTO/SB/15A and 15B), issue fee payment in the micro entity amount will not be accepted at the risk of application abandonment.

NOTE: If the application was previously under micro entity status, checking this box will be taken to be a notification of loss of entitlement to micro entity status.

NOTE: Checking this box will be taken to be a notification of loss of entitlement to small or micro entity status, as applicable.

NOTE: This form must be signed in accordance with 37 CFR 1.31 and 1.33. See 37 CFR 1.4 for signature requirements and certifications.

Authorized Signature _____

Date _____

Typed or printed name _____

Registration No. _____



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
15/783,370	10/13/2017	Frank Yang	SHUMAN.122C1	6434
20995	7590	02/12/2020	EXAMINER	
KNOBBE MARTENS OLSON & BEAR LLP			LUO, DAVID S	
2040 MAIN STREET			ART UNIT	
FOURTEENTH FLOOR			PAPER NUMBER	
IRVINE, CA 92614			2837	
DATE MAILED: 02/12/2020				

Determination of Patent Term Adjustment under 35 U.S.C. 154 (b) (Applications filed on or after May 29, 2000)

The Office has discontinued providing a Patent Term Adjustment (PTA) calculation with the Notice of Allowance.

Section 1(h)(2) of the AIA Technical Corrections Act amended 35 U.S.C. 154(b)(3)(B)(i) to eliminate the requirement that the Office provide a patent term adjustment determination with the notice of allowance. See Revisions to Patent Term Adjustment, 78 Fed. Reg. 19416, 19417 (Apr. 1, 2013). Therefore, the Office is no longer providing an initial patent term adjustment determination with the notice of allowance. The Office will continue to provide a patent term adjustment determination with the Issue Notification Letter that is mailed to applicant approximately three weeks prior to the issue date of the patent, and will include the patent term adjustment on the patent. Any request for reconsideration of the patent term adjustment determination (or reinstatement of patent term adjustment) should follow the process outlined in 37 CFR 1.705.

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Customer Service Center of the Office of Patent Publication at 1-(888)-786-0101 or (571)-272-4200.

OMB Clearance and PRA Burden Statement for PTOL-85 Part B

The Paperwork Reduction Act (PRA) of 1995 requires Federal agencies to obtain Office of Management and Budget approval before requesting most types of information from the public. When OMB approves an agency request to collect information from the public, OMB (i) provides a valid OMB Control Number and expiration date for the agency to display on the instrument that will be used to collect the information and (ii) requires the agency to inform the public about the OMB Control Number's legal significance in accordance with 5 CFR 1320.5(b).

The information collected by PTOL-85 Part B is required by 37 CFR 1.311. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 30 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, Virginia 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450. Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

Privacy Act Statement

The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C. 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether disclosure of these records is required by the Freedom of Information Act.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspection, or a published patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

Notice of Allowability	Application No. 15/783,370	Applicant(s) Yang et al.	
	Examiner DAVID S LUO	Art Unit 2837	AIA (FITF) Status No

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 1/10/2020.
☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on _____.

2. ☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.

3. ☒ The allowed claim(s) is/are 21-44. As a result of the allowed claim(s), you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see http://www.uspto.gov/patents/init_events/pph/index.jsp or send an inquiry to PPHfeedback@uspto.gov.

4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

Certified copies:

a) ☐ All b) ☐ Some *c) ☐ None of the:

1. ☐ Certified copies of the priority documents have been received.

2. ☐ Certified copies of the priority documents have been received in Application No. _____.

3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.

Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).

6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☒ Notice of References Cited (PTO-892) 2. ☒ Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date <u>1/10/2020</u> . 3. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material _____. 4. ☐ Interview Summary (PTO-413), Paper No./Mail Date. _____.	5. ☐ Examiner's Amendment/Comment 6. ☒ Examiner's Statement of Reasons for Allowance 7. ☐ Other _____.
--	--

/DAVID LUO/
Primary Examiner, Art Unit 2837

DETAILED ACTION

1. The present application is being examined under the pre-AIA first to invent provisions.
2. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after the Notice of Allowability. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, Applicant's IDS filed on 1/10/2020 has been fully considered.

Allowable Subject Matter

3. Claims 21-44 are allowed.
4. The following is a statement of reasons for the indication of allowable subject matter.

The non-obvious features are:

As per independent claim 21: A trim member configured to rotate between a closed position and an open position, wherein: in the closed position, a front of the trim member is adjacent the front upper edge of the body component; and in the open position, the front of the trim member is spaced apart from and vertically higher than the front upper edge of the body component; and a retaining mechanism configured to maintain the trim member in the open position against the force of gravity including remaining claim limitations.

As per independent claim 35: Maintaining the trim ring in the open position against the force of gravity with the retaining mechanism, the trim ring being held in the open position at an acute angle with respect to a longitudinal axis of the body component; positioning an upper portion of the trash bag over an upper edge of the body component; disengaging the trim

ring from the retaining mechanism; and rotating the trim ring from the open position to the closed position including remaining claim limitations.

Conclusion

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

USPN 6,774,586 to Shih discloses a trash bin lid control system.

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to David S. Luo whose telephone number is (571)270-5251. The examiner can normally be reached on M-F 9AM-6PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Eduardo Colon-Santana can be reached on (571)272-2060. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/DAVID LUO/
Primary Examiner, Art Unit 2837

<i>Notice of References Cited</i>	Application/Control No. 15/783,370		Applicant(s)/Patent Under Reexamination Yang et al.	
	Examiner DAVID S LUO		Art Unit 2837	Page 1 of 1

U.S. PATENT DOCUMENTS						
*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	CPC Classification	US Classification
*	A	US-6774586-B1	08-2004	Shih; Tsung-Hwan	B65F1/06	100/43
	B					
	C					
	D					
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	F					
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	H					
	I					
	J					
	K					
	L					
	M					

FOREIGN PATENT DOCUMENTS						
*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	CPC Classification
	N					
	O					
	P					
	Q					
	R					
	S					
	T					

NON-PATENT DOCUMENTS		
*		Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages)
	U	
	V	
	W	
	X	

*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)
Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.

Issue Classification 	Application/Control No. 15/783,370	Applicant(s)/Patent Under Reexamination Yang et al.
	Examiner DAVID S LUO	Art Unit 2837

CPC						
Symbol				Type	Version	
B65F	/	1	/	1638	F	2013-01-01
B65F	/	1	/	1646	I	2013-01-01
B65F	/	1	/	04	I	2013-01-01
B65F	/	1	/	06	I	2013-01-01
B65F	/	1	/	068	I	2013-01-01

CPC Combination Sets							
Symbol				Type	Set	Ranking	Version
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NONE	Total Claims Allowed:		
(Assistant Examiner)	(Date)	23	
/DAVID LUO/ Primary Examiner, Art Unit 2837	05 February 2020	O.G. Print Claim(s)	
(Primary Examiner)	(Date)	1	O.G. Print Figure
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Issue Classification 	Application/Control No. 15/783,370	Applicant(s)/Patent Under Reexamination Yang et al.
	Examiner DAVID S LUO	Art Unit 2837

INTERNATIONAL CLASSIFICATION			
CLAIMED			
B65F1/16	/	1	/ 16
B65F1/04	/	1	/ 04
B65F1/06	/	1	/ 06
NON-CLAIMED			
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US ORIGINAL CLASSIFICATION	
CLASS	SUBCLASS
318	3

CROSS REFERENCES(S)						
CLASS	SUBCLASS (ONE SUBCLASS PER BLOCK)					
318	34					

NONE		Total Claims Allowed:	
(Assistant Examiner)	(Date)	23	
/DAVID LUO/ Primary Examiner, Art Unit 2837 (Primary Examiner)	05 February 2020 (Date)	O.G. Print Claim(s) 1	O.G. Print Figure 2

Issue Classification 	Application/Control No. 15/783,370	Applicant(s)/Patent Under Reexamination Yang et al.
	Examiner DAVID S LUO	Art Unit 2837

☐ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47

CLAIMS															
Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original
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NONE	Total Claims Allowed:					
(Assistant Examiner)	(Date)	23				
/DAVID LUO/ Primary Examiner, Art Unit 2837 (Primary Examiner)	05 February 2020 (Date)	<table><tr><td>O.G. Print Claim(s)</td><td>O.G. Print Figure</td></tr><tr><td>1</td><td>2</td></tr></table>	O.G. Print Claim(s)	O.G. Print Figure	1	2
O.G. Print Claim(s)	O.G. Print Figure					
1	2					

Search Notes 	Application/Control No. 15/783,370	Applicant(s)/Patent Under Reexamination Yang et al.
	Examiner DAVID S LUO	Art Unit 2837

CPC - Searched*		
Symbol	Date	Examiner
B65F 1/1638	10/09/2019	Luo
B65F 1/1638	02/05/2020	Luo

CPC Combination Sets - Searched*		
Symbol	Date	Examiner

US Classification - Searched*			
Class	Subclass	Date	Examiner
318	3, 34	10/09/2019	Luo
318	3, 34	02/05/2020	Luo

* See search history printout included with this form or the SEARCH NOTES box below to determine the scope of the search.

Search Notes		
Search Notes	Date	Examiner
East Search History attached and Inventor Searches done	10/09/2019	Luo
East Search History attached and Inventor Searches done	02/05/2020	Luo

Interference Search			
US Class/CPC Symbol	US Subclass/CPC Group	Date	Examiner
318	3	02/05/2020	Luo
B65F	1/1638	02/05/2020	Luo

/DAVID LUO/ Primary Examiner, Art Unit 2837	VOLUME DISTRIBUTORS, Ex. 1002 VOLUME DISTRIBUTORS, INC. v. SIMPLEHUMAN LLC, IP#2024-00060
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EAST Search History

EAST Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
S1	1	"15783370"	US-PGPUB; USPAT; USOCR; EPO; JPO	OR	OFF	2019/10/08 15:02
S2	1	"9790025".pn.	US-PGPUB; USPAT; USOCR; EPO; JPO	OR	OFF	2019/10/08 15:09
S3	596	(Yang near3 Frank).inv.	US-PGPUB; USPAT; USOCR; EPO; JPO	OR	OFF	2019/10/08 15:12
S4	37	(Wolbert near3 David).inv.	US-PGPUB; USPAT; USOCR; EPO; JPO	OR	OFF	2019/10/08 15:12
S5	208	(Sandor near3 Joseph).inv.	US-PGPUB; USPAT; USOCR; EPO; JPO	OR	OFF	2019/10/08 15:12
S6	16	(Yen near3 Kenneth).inv.	US-PGPUB; USPAT; USOCR; EPO; JPO	OR	OFF	2019/10/08 15:13
S7	31	(Cardenas near3 Orlando).inv.	US-PGPUB; USPAT; USOCR; EPO; JPO	OR	OFF	2019/10/08 15:13
S8	9	(Basha near3 Michael near3 James).inv.	US-PGPUB; USPAT; USOCR; EPO; JPO	OR	OFF	2019/10/08 15:14
S9	56	(Fruhauf near3 Christopher).inv.	US-PGPUB;	OR	OFF	2019/10/08 15:14

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S14	7	trash near6 can and lid near6 (rotat\$4 turn\$4 spin\$4) and trim near6 (rotat\$4 turn\$4 spin\$4) with (open closed) near6 position	US- PGPUB; USPAT; USOCR; EPO; JPO	OR	OFF	2019/10/08 18:39
S15	2	trash near6 can and lid near6 (rotat\$4 turn\$4 spin\$4) and trim near6 (rotat\$4 turn\$4 spin\$4) with (open closed) near6 position	USPAT; USOCR; EPO; JPO	OR	OFF	2019/10/08 18:40
S16	5	trash near6 can and lid near6 (rotat\$4 turn\$4 spin\$4) and trim near6 (rotat\$4 turn\$4 spin\$4) and (open closed) near6 position	USPAT; USOCR; EPO; JPO	OR	OFF	2019/10/08 18:57
S17	5	S16 AND ((B65F1/06 OR B65F1/1646 OR B65F1/04 OR B65F1/062 OR B65F1/1607 OR B65F1/1638 OR B65F2250/11 OR B65F2250/114 OR B65F2210/168 OR B65F2210/181 OR B65F2210/1815 OR B65F2250/111 OR B65F2250/112 OR B65F1/068 OR B65F1/1473 OR B65F1/1615 OR B65F1/163 OR B65F2001/1661 OR B65F2001/1669 OR B65F2210/108 OR B65F2210/128 OR B65F2220/12).CPC.)	USPAT; USOCR; EPO; JPO	OR	OFF	2019/10/08 18:59
S18	3	S16 AND ((E05F15/73 OR E05F2015/763 OR E05F2015/765 OR Y10T29/49002).CPC.)	USPAT; USOCR; EPO; JPO	OR	OFF	2019/10/08 18:59
S19	1	S16 AND ((E05Y2900/602 OR G01D5/16 OR G01J1/4204 OR G10L15/08 OR G10L15/22 OR G10L2015/088 OR G10L2015/223 OR G10L25/51).CPC.)	USPAT; USOCR; EPO; JPO	OR	OFF	2019/10/08 18:59
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EAST Search History (Interference)

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2/ 5/ 2020 8:39:06 PM
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BIB DATA SHEET

CONFIRMATION NO. 6434

SERIAL NUMBER 15/783,370	FILING or 371(c) DATE 10/13/2017 RULE	CLASS 318	GROUP ART UNIT 2837	ATTORNEY DOCKET NO. SHUMAN.122C1	
APPLICANTS simplehuman, LLC, Torrance, CA; INVENTORS Frank Yang, Rancho Palos Verdes, CA; David Wolbert, Redondo Beach, CA; Joseph Sandor, Newport Beach, CA; Kenneth Yen, Torrance, CA; Orlando Cardenas, Laguna Niguel, CA; Michael James Basha, Brisbane, CA; Christopher B. Fruhauf, San Anselmo, CA; ** CONTINUING DATA ***** This application is a CON of 13/787,638 03/06/2013 PAT 9790025 which claims benefit of 61/609,233 03/09/2012 ** FOREIGN APPLICATIONS ***** ** IF REQUIRED, FOREIGN FILING LICENSE GRANTED ** ** SMALL ENTITY ** 10/26/2017					
Foreign Priority claimed ☐ Yes ☒ No 35 USC 119(a-d) conditions met ☐ Yes ☒ No Verified and /DAVID S LUO/ Acknowledged Examiner's Signature	☐ Met after Allowance Initials	STATE OR COUNTRY CA	SHEETS DRAWINGS 13	TOTAL CLAIMS 21	INDEPENDENT CLAIMS 2
ADDRESS KNOBBE MARTENS OLSON & BEAR LLP 2040 MAIN STREET FOURTEENTH FLOOR IRVINE, CA 92614 UNITED STATES					
TITLE TRASH CAN ASSEMBLY					
FILING FEE RECEIVED 940	FEES: Authority has been given in Paper No. _____ to charge/credit DEPOSIT ACCOUNT No. _____ for following:		☐ All Fees ☐ 1.16 Fees (Filing) ☐ 1.17 Fees (Processing Ext. of time) ☐ 1.18 Fees (Issue) ☐ Other _____ ☐ Credit		

PTO/SB/08 Equivalent

INFORMATION DISCLOSURE STATEMENT BY APPLICANT	Application No.	15/783,370
	Filing Date	October 13, 2017
	First Named Inventor	Frank Yang
	Art Unit	2837
(Multiple sheets used when necessary)	Examiner	David S. Luo
SHEET 1 OF 2	Attorney Docket No.	SHUMAN.122C1

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Examiner Initials	Cite No.	Document Number Number - Kind Code (if known) Example: 1,234,567 B1	Publication Date MM-DD-YYYY	Name	Pages, Columns, Lines Where Relevant Passages or Relevant Figures Appear
	1	6,612,099	09-02-2003	Stravitz	
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	3	8,393,489	03-12-2013	Stravitz	
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	5	10,494,175 and its entire file history (Atty. Docket No. SHUMAN.202A)	12-03-2019	Yang et al.	
	6	D632,039	02-01-2011	Yang et al.	
	7	D758,686	06-07-2016	Beumer	
	8	D820,544	06-12-2018	Joseph	
	9	D825,876	08-14-2018	Chen	
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	11	D858,024 (Atty. Docket No. SHUMAN.229DA)	08-27-2019	Yang et al.	
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	19	2013/0048641	02-28-2013	Romano	
	20	2016/0200508	07-14-2016	Thoma et al.	
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	22	2019/0077595	03-14-2019	Wang et al.	
	23	2019/0185263 and its entire file history (Atty. Docket No. SHUMAN.153D1)	06-20-2019	Yang et al.	
	24	2019/0276232 and its entire file history (Atty. Docket No. SHUMAN.225A)	09-12-2019	Yang et al.	

Examiner Signature	/DAVID LUO/	Date Considered	02/03/2020
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***Examiner:** Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

PTO/SB/08 Equivalent

INFORMATION DISCLOSURE STATEMENT BY APPLICANT	Application No.	15/783,370
	Filing Date	October 13, 2017
	First Named Inventor	Frank Yang
	Art Unit	2837
(Multiple sheets used when necessary)	Examiner	David S. Luo
SHEET 2 OF 2	Attorney Docket No.	SHUMAN.122C1

FOREIGN PATENT DOCUMENTS						
Examiner Initials	Cite No.	Foreign Patent Document Country Code-Number-Kind Code Example: JP 1234567 A1	Publication Date MM-DD-YYYY	Name	Pages, Columns, Lines Where Relevant Passages or Relevant Figures Appear	T ¹
	25	CA 2182840	09-26-1997	Tucker Housewares		
	26	CA 2695086	09-06-2010	simplehuman, LLC		
	27	CN 101177946 A	05-14-2008	Norinco Co		X-abstract
	28	CN 201372076 Y	12-30-2009	Zhang		X-abstract
	29	CN 201447201 U	05-05-2010	Lin		X-abstract
	30	CN 201597962 U	10-06-2010	Jiangmen Huijie Plastic Hardware Manufacturing Co., Ltd.		X-machine translation
	31	CN 103207416 A	07-17-2013	Chen		X-abstract
	32	CN 103303618 A	09-18-2013	simplehuman, LLC		X-abstract
	33	CN 205169479 U	04-20-2016	Chen		X-abstract
	34	TW 183920	05-11-1992			
	35	TW 230977	09-21-1994	Chang et al.		
	36	TW 395392	06-21-2000	Chen		
	37	TW 145989	03-21-2012	simplehuman, LLC		
	38	TW D162495	08-21-2014	simplehuman, LLC		

NON PATENT LITERATURE DOCUMENTS			
Examiner Initials	Cite No.	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T ¹
	39	Web page showing picture of Hero Bullet trash can, archived November 17, 2004, downloaded from http://web.archive.org/web/20041117003115/http://www.simplehuman.com/images/hero_bullet.jpg	
	40	Office Action for European Application No. 13158229.8, dated July 12, 2018, in 5 pages (Atty. Docket No. SHUMAN.122EP)	
	41	Office Action for European Application No. 13158229.8, dated June 27, 2019, in 5 pages (Atty. Docket No. SHUMAN.122EP)	

31655191

Examiner Signature /DAVID LUO/	Date Considered 02/03/2020
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***Examiner:** Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

T¹ - Place a check mark in this area when an English language translation is attached

VOLUME DISTRIBUTORS, Ex. 1002

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH

SIMPLEHUMAN LLC, IPR2024-00050

Page 513 of 521

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

First Inventor	:	Frank Yang
App. No.	:	15/783,370
Filed	:	October 13, 2017
For	:	TRASH CAN ASSEMBLY
Examiner	:	David S. Luo
Art Unit	:	2837
Conf. No.	:	6434

COMMENTS ON STATEMENT OF REASONS FOR ALLOWANCE**Mail Stop Issue Fee**

Commissioner for Patents

P.O. Box 1450

Alexandria, VA 22313-1450

Dear Commissioner:

In response to the Statement of Reasons for Allowance in the Notices of Allowance dated October 17, 2019 and February 12, 2020 (“Reasons”), Applicant respectfully submits the following comments.

Applicant thanks the Examiner for his diligent examination of each of the pending claims and acknowledging the patentability thereof. Applicant wishes to underscore that each claim is separately patentable based on the combination of features recited therein and not on any particular feature or group of features.

To the extent that the Reasons omit claim elements, add claim elements, group claims together, or identify purportedly similar features or distinguishing features of a claim or a group of claims, Applicant respectfully disagrees. Also, to the extent that the Reason’s paraphrasing of the subject matter of the claims deviates from the actual language recited in each individual claim, Applicant respectfully disagrees. Further, Applicant respectfully disagrees with the Reasons to the extent there is any implication that the patentability of the dependent claims is dependent on, or these claims have the same scope as, the independent claim from which each

Application No.: 15/783,370
Filing Date: October 13, 2017

depends. As noted above, patentability of each claim rests on each claim taken as a whole on its own merits.

The claims of the present application may be different in scope than the claims that may be pursued in other applications at least partially owned by the owner of the present application. Applicant reserves the right to pursue claims directed to any subject matter supported by the present disclosure in any of the other applications or in future applications, and no disclaimer, disavowal, or estoppel shall be inferred by any reviewers of the prosecution history of the present application.

Respectfully submitted,

KNOBBE, MARTENS, OLSON & BEAR, LLP

Dated: April 30, 2020

By: Jason R. Swartz/

Jason Swartz
Registration No. 64,420
Registered Practitioner
Customer No. 20995
(949) 760-0404

32380128

PART B - FEE(S) TRANSMITTAL

Complete and send this form, together with applicable fee(s), by mail or fax, or via EFS-Web.

By mail, send to: Mail Stop ISSUE FEE
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

By fax, send to: (571)-273-2885

INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

CURRENT CORRESPONDENCE ADDRESS (Note: Use Block 1 for any change of address)

Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

20001 7990 03/12/2020
KNOBBE MARTENS OLSON & BEAR LLP
2040 MAIN STREET
FOURTEENTH FLOOR
IRVINE, CA 92614

Certificate of Mailing or Transmission

I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being transmitted to the USPTO via EFS-Web or by facsimile to (571) 273-2885, on the date below:

_____ (Type or printed name)
_____ (Signature)
_____ (Date)

APPLICATION NO.	FILED DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
15/783,370	10/13/2017	Frank Yang	SHUMAN.123C1	6434

TITLE OF INVENTION: TRASH CAN ASSEMBLY

APPL. TYPE	ENTRY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	SMALL	\$500	\$0.00	\$0.00	\$500	05/12/2020

EXAMPER	ART UNIT	CLASS SUBCLASS
LISO, DAVID S	2837	318-003000

3. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).

☐ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.

☐ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47, Rev 03-09 or same recent) attached. Use of a Customer Number is required.

2. For printing on the patent front page, list

(1) The names of up to 3 registered patent attorneys or agents (OR, alternatively,

(2) The name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed.

1. **Knobbe, Martens,
Olson & Bear, LLP**

2. _____

3. _____

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document must have been previously recorded, or filed for recordation, as set forth in 37 CFR 3.11 and 37 CFR 3.83(a). Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE

simplehuman, LLC

(B) RESIDENCE (CITY and STATE OR COUNTRY)

Torrance, California

Please check the appropriate assignee category or categories (will not be printed on the patent): ☐ Individual ☒ Corporation or other private group entity ☐ Government4a. Fees submitted: ☒ Issue Fee ☐ Publication Fee (if required) ☐ Advance Order - # of Copies _____

4b. Method of Payment: (Please first specify any previously paid fee shown above)

☒ Electronic Payment via EFS-Web ☐ Enclosed check ☐ Non-electronic payment by credit card (Attach form PTO-2038)

☒ The Director is hereby authorized to charge the required fee(s), any deficiency, or credit any overpayment to Deposit Account No. **11-1410**

5. Change in Entry Status: (from status indicated above)

☐ Applicant certifying micro entity status. See 37 CFR 1.29

☐ Applicant asserting small entity status. See 37 CFR 1.27

☐ Applicant changing to regular undiscounted fee status.

NOTE: Absent a valid certification of Micro Entity Status (see forms PTO/SB/15A and 15B), issue fee payment in the micro entity amount will not be accepted as the risk of application abandonment.

NOTE: If the application was previously under micro entity status, checking this box will be taken to be a notification of loss of entitlement to micro entity status.

NOTE: Checking this box will be taken to be a notification of loss of entitlement to small or micro entity status, as applicable.

NOTE: This form must be signed in accordance with 37 CFR 1.31 and 1.34. See 37 CFR 1.4 for signature requirements and certifications.

Authorized Signature /Jason R. Swartz/Date April 30, 2020Typed or printed name Jason R. SwartzRegistration No. 64,420

Electronic Patent Application Fee Transmittal				
Application Number:		15783370		
Filing Date:		13-Oct-2017		
Title of Invention:		TRASH CAN ASSEMBLY		
First Named Inventor/Applicant Name:		Frank Yang		
Filer:		Jason R. Swartz/Linh Do		
Attorney Docket Number:		SHUMAN.122C1		
Filed as Small Entity				
Filing Fees for Utility under 35 USC 111(a)				
Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
UTILITY APPL ISSUE FEE	2501	1	500	500

Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Extension-of-Time:				
Miscellaneous:				
Total in USD (\$)				500

Electronic Acknowledgement Receipt

EFS ID:	39312267
Application Number:	15783370
International Application Number:	
Confirmation Number:	6434
Title of Invention:	TRASH CAN ASSEMBLY
First Named Inventor/Applicant Name:	Frank Yang
Customer Number:	20995
Filer:	Jason R. Swartz/Christina Graul
Filer Authorized By:	Jason R. Swartz
Attorney Docket Number:	SHUMAN.122C1
Receipt Date:	30-APR-2020
Filing Date:	13-OCT-2017
Time Stamp:	13:08:28
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	CARD
Payment was successfully received in RAM	\$500
RAM confirmation Number	E20204TD08547800
Deposit Account	111410
Authorized User	Christina Graul

The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:

37 CFR 1.16 (National application filing, search, and examination fees)

37 CFR 1.17 (Patent application and reexamination processing fees)

VOLUME DISTRIBUTORS, Ex. 1002

VOLUME DISTRIBUTORS, INC. v. SIMPLEHUMAN LLC, IPR2024-00050

File Listing:					
Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Miscellaneous Incoming Letter	Comments.pdf	81927	no	2
			9d04629b6e22709b8fca0dd4cff58964b2d80ef0		
Warnings:					
Information:					
2	Issue Fee Payment (PTO-85B)	Issue_Fee.pdf	88718	no	1
			8eb2ca5e0b385790a3bcd6a4aa5fbb498420d3		
Warnings:					
Information:					
3	Fee Worksheet (SB06)	fee-info.pdf	30164	no	2
			118d06e83b22f2a1edcefea3c0ef27af83b51b7a		
Warnings:					
Information:					
Total Files Size (in bytes):			200809		
<p>This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.</p> <p><u>New Applications Under 35 U.S.C. 111</u> If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.</p> <p><u>National Stage of an International Application under 35 U.S.C. 371</u> If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.</p> <p><u>New International Application Filed with the USPTO as a Receiving Office</u> If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.</p>					



APPLICATION NO.	ISSUE DATE	PATENT NO.	ATTORNEY DOCKET NO.	CONFIRMATION NO.
15/783,370	06/16/2020	10683165	SHUMAN.122C1	6434

20995 7590 05/27/2020

KNOBBE MARTENS OLSON & BEAR LLP
2040 MAIN STREET
FOURTEENTH FLOOR
IRVINE, CA 92614

ISSUE NOTIFICATION

The projected patent number and issue date are specified above.

Determination of Patent Term Adjustment under 35 U.S.C. 154 (b) (application filed on or after May 29, 2000)

The Patent Term Adjustment is 223 day(s). Any patent to issue from the above-identified application will include an indication of the adjustment on the front page.

If a Continued Prosecution Application (CPA) was filed in the above-identified application, the filing date that determines Patent Term Adjustment is the filing date of the most recent CPA.

Applicant will be able to obtain more detailed information by accessing the Patent Application Information Retrieval (PAIR) WEB site (<http://pair.uspto.gov>).

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Application Assistance Unit (AAU) of the Office of Data Management (ODM) at (571)-272-4200.

APPLICANT(s) (Please see PAIR WEB site <http://pair.uspto.gov> for additional applicants):

simplehuman, LLC, Torrance, CA;
Frank Yang, Rancho Palos Verdes, CA;
David Wolbert, Redondo Beach, CA;
Joseph Sandor, Newport Beach, CA;
Kenneth Yen, Torrance, CA;
Orlando Cardenas, Laguna Niguel, CA;
Michael James Basha, Brisbane, CA;
Christopher B. Fruhauf, San Anselmo, CA;

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