(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) **EP 1 923 333 A1**

(12) EUROPEAN PATENT APPLICATION

(43) Date of publication:
21.05.2008 Bulletin 2008/21

(51) Int Cl.:
B65F 1/06 *(2006.01)* ***B65F 1/16*** *(2006.01)*
B65F 1/04 *(2006.01)*

(21) Application number: **07022311.0**

(22) Date of filing: **16.11.2007**

(84) Designated Contracting States:
AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HU IE IS IT LI LT LU LV MC MT NL PL PT RO SE SI SK TR
Designated Extension States:
AL BA HR MK RS

(30) Priority: **20.11.2006 US 602081**

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(54) Trash can assembly

(57) A trash can assembly (20) includes a shell (22) having an enclosing wall that has an upper edge, a trim (28) pivotably connected to the upper edge, and a lid (30) pivotably connected to the upper edge. The trim (28) is seated on the upper edge, and the lid (30) is seated on the trim (28), when the lid (30) is closed. In addition, the trim (28) and the lid (30) pivot about the same pivot axis.

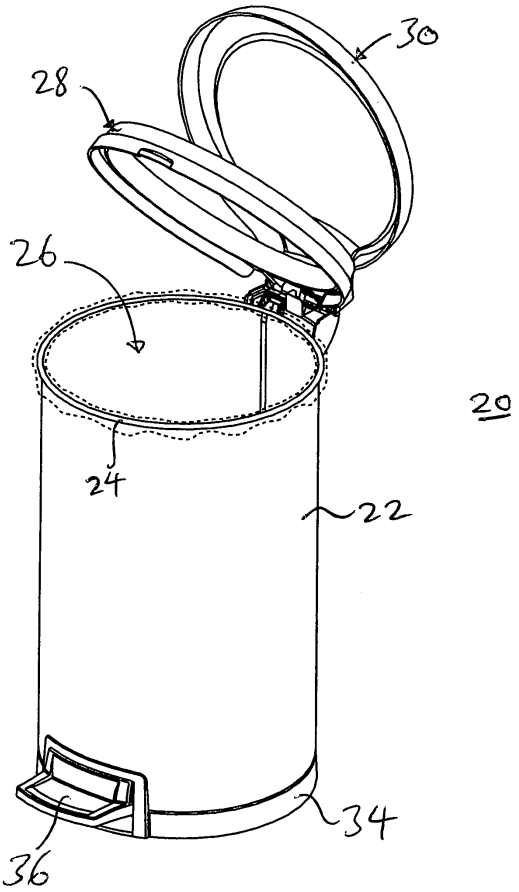

FIG. 2

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Description

[0001] The present invention relates to a trash can assembly, and in particular, to a trash can assembly that has a trim that retains the open top edge of a plastic trash bag.

[0002] A major concern for both the nome and the workplace is containing and holding wastes, refuse, and trash until permanent disposal. Trash cans act as containers for holding trash and other wastes that are produced in any typical home or office. Trash and garbage cans often employ lids and covers to contain the trash and its associated odor, to hide the trash from view, and to prevent the trash from contaminating areas beyond the lid.

[0003] Conventional trash cans have been improved over the years to make them more user-friendly, sanitary, and hygienic. For example, many trash cans are now provided with a foot pedal positioned adjacent the base of the trash can so that a user can step on the foot pedal to open the lid of the trash can, thereby freeing up the user's hands to toss trash, or to change the plastic liner or bag that is used to line the trash can. Other trash cans have even provided an internal metal or plastic liner that fits inside the trash can, and which can be removed to be washed. However, these conventional trash cans still suffer from a number of drawbacks.

[0004] A number of these drawbacks are associated with the deployment, use and removal of the trash bag. 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. Unfortunately, the weight of the waste materials deposited into the trash bag often causes the trash bag to slip from the mouth of the trash can and fall crumpled into the interior of the trash can. This can result in the undesirable spillage of the waste material inside the trash bag.

[0005] Thus, there remains a need for a trash can that facilitates the convenient and effective deployment, use and removal of a trash bag.

[0006] It is an object of the present invention to provide a trash can assembly that allows for a trash bag to be conveniently and effectively deployed, used and removed.

[0007] It is another object of the present invention to provide a trash can assembly that securely retains a trash bag at the mouth of the trash can.

[0008] In order to accomplish the objects of the present invention, the present invention provides a trash can assembly that includes a shell having an enclosing wall that has an upper edge, a trim pivotably connected to the upper edge, and a lid pivotably connected to the upper edge. The trim is seated on the upper edge, and the lid is seated on the trim, when the lid is closed. In addition, the trim and the lid pivot about the same pivot axis.

[0009] According to another aspect of the present invention, the assembly can also include a locking element on the trim that removably engages a portion of the upper edge.

[0010] According to another aspect of the present invention, the upper edge has an annular lip which extends outwardly beyond the wall of the shell.

[0011] According to another aspect of the present invention, the shell includes a bag tuck opening provided adjacent the upper edge.

[0012] According to another aspect of the present invention, a bowl-shaped liner is attached inside the shell adjacent the base of the shell.

BRIEF DESCRIPTION OF THE DRAWINGS

[0013]

FIG. 1 is a perspective view of a trash can assembly according to one embodiment of the present invention shown with the lid closed, and with a trash bag shown in phantom.

FIG. 2 is a perspective view of the trash can assembly of FIG. 1 shown with the lid opened, and with a trash bag shown in phantom.

FIG. 3 is a cross-sectional side view of the trash can assembly of FIG. 1.

FIG. 4 is an exploded perspective view of the trash can assembly of FIG. 1 shown with the lid opened.

FIG. 5 is an enlarged sectional view illustrating the hinge mechanism of the trash can assembly of FIG. 1.

FIG. 6 is an exploded view of FIG. 5.

FIG. 7 is a perspective sectional view of the lower portion of the trash can assembly of FIG. 1.

FIG. 8 is a bottom perspective view of the portion 8 of the trim shown in FIG. 4.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

[0014] The following detailed description is of the best presently contemplated modes of carrying out the invention. This description is not to be taken in a limiting sense, but is made merely for the purpose of illustrating general principles of embodiments of the invention. The scope of the invention is best defined by the appended claims.

[0015] FIGS. 1-8 illustrate one embodiment of a trash can assembly 20 according to the present invention. The assembly 20 has a shell 22 that can be made from either plastic or metal. The shell 22 is an enclosing wall which can have any desired shape, including oval, triangular, rectangular, square or circular (among others), although the shell 22 is illustrated in FIGS. 1-7 as being generally circular. The top edge of the shell 22 has an annular lip 24 which defines an opened mouth 26. The annular lip 24 extends outwardly beyond the wall of the shell 22, and

has a generally rounded cross-section.

[0016] A trim 28 is pivotably coupled to the top edge 24, and can be made from plastic or metal. The trim 28 and the shell 22 can be made from the same or different materials. The trim 28 has an annular base 44 that is adapted to be seated on the lip 24 of the shell 22, and an annular wall 46 extending vertically from the base 44, and which is recessed from the base 24 to define a shoulder 45 between the wall 46 and the base 44. A lid 30 is pivotably connected to the upper portion of the shell 22 using a hinged connection that is described below. The lid 30 can be made of a solid and stable material, such as a metal. The lid 30 has an annular wall 48 that is adapted to be seated on the annular base 44 of the trim 28 when the lid 30 is closed, with the walls 46 and 48 positioned side-by-side such that the outer surfaces of the wall 48 and the base 44 are flush (see FIG. 1).

[0017] The shell 22 has a base 34, and a foot pedal 36 is pivotably secured to the base 34. The base 34 of the shell 22 can define a generally annular and curved skirt. In a non-limiting embodiment of the present invention, the skirt can be formed in one plastic piece. The shell 22 can be attached to the top of the skirt of the base 34 by a groove snap-on, glue, welding, screws, and similar attachment mechanisms. Referring to FIGS. 3 and 7, a bowl-shaped liner insert 100 is attached to the base 34 at the bottom of the shell 22, and forms a seal or lower wall for the interior of the shell 22. The liner insert 100 can be made of plastic, and defines a smooth base for the interior of the shell 22. The liner insert 100 is particularly advantageous where the trash can assembly 20 does not utilize a rigid inner liner.

[0018] Referring to FIG. 3, a link assembly extends from the foot pedal 36 along the base 34 and then upwardly along the shell 22 to the lid 30. The link assembly operates to translate an up-down pivot motion of the pedal 36 to an up-down pivot motion for the lid 30. The link assembly includes a pedal bar 38 having a rear end that is pivotably coupled to the bottom end of a vertical link rod 40. The pedal bar 38 is pivotably coupled to the base 34 for pivoting movement about a pivot axis 42, and is connected at its front end to the foot pedal 36. The bottom of the link rod 40 is housed inside the base 34, and the link rod 40 extends through the base 34 to the exterior of the shell 22, and then extends vertically along the rear of the shell 22 to the location of the lid 30 at the upper edge 24.

[0019] The trash can assembly 20 has a hinge assembly that pivotably couples the lid 30 and the trim 28 along the same pivot axis that is defined by a pivot shaft 50. The hinge assembly is illustrated in greater detail in FIGS. 5 and 6 and includes a hinge housing 52 that is provided on the shell 22, a pair of pivot ears 54 and 56 provided at the rear of the trim 28, and a pair of pivot ears 58 and 60 provided at the rear of the lid 30.

[0020] The hinge housing 52 is secured to the outer surface of a rear part of the shell 22 adjacent the lip 24, and includes an L-shaped shield 66 extending vertically from a horizontal top surface 68 of the hinge housing 52, a bag tuck opening 70 provided in a region 72 that is recessed from the top surface 68, and a pivot tube 74 positioned at the rear of the hinge housing 52 on the top surface 68. The pivot tube 74 has a bore 76 which is adapted to receive the pivot shaft 50. The bag tuck opening 70 functions to grip and hold portions of a trash bag, and is defined by a border 78 that has cut-out sections 80. Portions of the trash bag can be tucked into one or more of the cut-out sections 80 so that these cut-out sections 80 can grip the tucked portions of the trash bag. The shield 66 encircles an opening (not shown) in the top surface 68, and functions to shield or separate the hooked end 82 at the top of the link rod 40.

[0021] The trim 28 has a pair of pivot ears 54 and 56 that are spaced apart at the rear of the trim 28. The pivot ears 54 and 56 are spaced so that the pivot tube 74 is snugly fitted between the ears 54, 56, as best shown in FIG. 5. Each ear 54, 56 has a through-hole 84 that is adapted for receiving the pivot shaft 50.

[0022] The lid 30 has a pair of pivot ears 58, 60 that are spaced so that the pivot ears 54, 56 are snugly fitted between the ears 58, 60, as best shown in FIG. 5. Specifically, the ear 58 has two parallel walls 90 and 92, with the inner wall 92 positioned snugly next to the pivot ear 54, and the ear 60 has two parallel walls 94 and 96, with the inner wall 96 positioned snugly next to the pivot ear 56. Each ear 58, 60 has a through-hole 85 that is adapted for receiving the pivot shaft 50. A pivot holder 86 extends from the inner surface 88 of the lid 30 via a vertical support 102 that is secured to the inner surface 88. The pivot holder 86 has two parallel vertical walls 104 and 106, with an L-shaped slot 108 provided in each wall 104, 106.

[0023] Thus, the pivot shaft 50 extends through the through-holes 85, 84 and the bore 76 to pivotably connect the trim 28 and the lid 30 along the same pivot axis.

[0024] The top of the link rod 40 has a hooked end 82 that extends through the hinge housing 52, and in particular, the opening shielded by the shield 66. The hooked end 82 is received for pivoting motion inside the slots 108 of the walls 104, 106, as best shown in FIG. 5. Each slot 108 has an upper leg 110 and a lower leg 112. The hooked end 82 is normally retained for pivoting motion in the upper leg 110 of each slot 108. When the lid 30 is fully opened, the user can manually push the hooked end 82 into the lower leg 112 of each slot 108, which will then secure the lid 30 in the opened position until the hooked end 82 is disengaged from the lower leg 112 of each slot 108.

[0025] Referring now to FIG. 8, the trim 28 a lock mechanism that functions to secure the trim 28 to the lip 24 of the shell 22. The lock mechanism includes at least one hook element 120 that is secured to the inside of the base 44 of the trim 28. The hook element 120 has an inner curved surface 122 that is adapted to receive the rounded lip 24, thereby securing the lip 24 (and the shell 22) to the trim 28. A handle 124 can be provided on the outside of the base 44 adjacent the location of the lock mecha-

nism, so that a user can grip the handle 124 to lift the trim 28 from the shell 22.

[0026] In use, the user can step on the foot pedal 36 to cause the lid 30 to open. The user can adjust the hooked end 82 into the lower leg 112 of the slots 108 to lock the lid 30 in the opened position. The user can then grip the handle 124 to lift (i.e., separate) the trim 28 from the lip 24 of the shell 22, with the trim 28 pivoting about the same pivot axis as the lid 30. Next, the user can insert a trash bag into the interior of the shell 22, and then invert the mouth of the trash bag over the annular lip 24. The outwardly-extending, rounded construction of the lip 22 is effective in retaining the inverted mouth of the trash bag at the lip 24. This is illustrated in FIG. 2. In addition, part of the trash bag can be inserted into the bag tuck opening 70. The trim 28 is then pivoted downwardly until it is rested on top of the lip 24, with the lip 24 secured inside the hook element(s) 120. The mouth of the trash bag will essentially be sandwiched by the trim 28 and the lip 24, thereby ensuring that the mouth of the trash bag is always opened during use, and that the trash bag will be retained at the top of the shell 22. The user can then move the hooked end 82 into the upper leg 110 and pivot the lid 30 downwardly to be closed, as shown in FIG. 1. To replace the trash bag, the user can open the lid 30 and lift the trim 28 in the manner described above, and then lift the trash bag from the shell 22 before replacing it with a new trash bag.

[0027] Thus, the trash can assembly 20 provides several features that are effective in retaining a trash bag at the mouth of the shell 22. For example, the outwardly-extending lip 24 of the shell 22 makes it easy for the user to invert the mouth of the trash bag to retain the trash bag at the lip 24. The trim 28 securely retains the mouth of the trash bag at the lip 24 of the shell 22. The locking element 120 ensures that the trim 28 is secured to the lip 24 of the shell 22 so that the trash bag cannot be inadvertently disengaged from the lip 24. In addition, the user can tuck a portion of the trash bag into the bag tuck opening 70. All of these features ensure that the trash bag is retained securely at the lip 24 of the shell 22.

[0028] While the description above refers to particular embodiments of the present invention, it will be understood that many modifications may be made without departing from the spirit thereof. The accompanying claims are intended to cover such modifications as would fall within the true scope and spirit of the present invention.

Claims

1. A trash can assembly, comprising:

a shell (22) having an enclosing wall that has an upper edge;
a trim (28) pivotably connected to the upper edge;
a lid (30) pivotably connected to the upper edge;
wherein the trim (28) is seated on the upper edge, and the lid (30) is seated seat on the trim, when the lid is closed; and
wherein the trim (28) and the lid (30) pivot about the same pivot axis.

2. The assembly of claim 1, wherein the trim (28) has a base (44) that is seated on the upper edge of the shell, and a wall (46) extending vertically from the base, which is recessed from the base (44) to define a shoulder (45) between the wall and the base, with the lid (30) seated on the shoulder (45).

3. The assembly of claim 1, wherein the trim (28) has a locking element that removably engages a portion of the upper edge.

4. The assembly of claim 1, wherein the upper edge has an annular lip (24) which extends outwardly beyond the wall of the shell.

5. The assembly of claim 4, wherein the lip (24) has a rounded cross-section.

6. The assembly of claim 1, further including a pivot shaft (50) that extends through a portion of the trim and a portion of the lid.

7. The assembly of claim 1, further including a hinge assembly that includes:

a hinge housing (52) provided on the shell;
a pivot ear provided on a portion of the trim (28) ;
a pivot ear provided on a portion of the lid (30); and
a pivot shaft (50) that extends through the hinge housing and the pivot ears of the trim (28) and the lid (30).

8. The assembly of claim 1, wherein the shell (22) includes a bag tuck opening (70) provided adjacent the upper edge.

9. The assembly of claim 1, wherein the shell (22) has a base (34), and a bowl-shaped liner (100) attached inside the shell adjacent the base of the shell.

10. A trash can assembly, comprising:

a shell (22) having an enclosing wall that defines an interior, with the wall having an upper edge;
a lid (30) pivotably connected to the upper edge;
a base (34); and
a bowl-shaped liner insert (100) attached inside the shell adjacent the base (34) of the shell.

11. The assembly of claim 10, wherein the liner insert (100) defines a smooth lower wall for the interior of

the shell and is made of plastic.

12. A trash can assembly, comprising:

a shell (22) having an enclosing wall that has an upper edge;
a hinge housing (52) provided on the enclosing wall adjacent the upper edge; a lid (30) pivotably connected to the upper edge at the hinge housing;
a bag tuck opening (70) provided in the hinge housing.

13. A trash can assembly, comprising:

a shell (22) having an enclosing wall that has an upper edge, with the upper edge having an annular lip (24) which extends outwardly beyond the wall of the shell; and
a lid (30) pivotably connected to the upper edge and seated on the annular lip (24) when the lid is closed.

14. The assembly of claim 13, wherein the lip (24) has a rounded cross-section.

15. A trash can assembly, comprising:

a shell (22) having an enclosing wall that has an upper edge, with the upper edge having an annular lip (24) which extends outwardly beyond the wall of the shell;
a trim (28) pivotably connected to the upper edge, and having a locking element that removably engages a portion of the upper edge;
a lid (30) pivotably connected to the upper edge;
a pivot shaft (50) that extends through a portion of the trim and a portion of the lid;

wherein the trim (28) is seated on the upper edge, and the lid (30) is seated on the trim (28), when the lid is closed.

16. The assembly of claim 15, wherein the trim (28) has a base that is seated on the upper edge of the shell, and a wall (46) extending vertically from the base (44), which is recessed from the base (44) to define a shoulder (45) between the wall and the base, with the lid (30) seated on the shoulder.

17. The assembly of claim 15, wherein the lip (24) has a rounded cross-section.

18. The assembly of claim 15, wherein the shell includes a bag tuck opening (70) provided adjacent the upper edge.

19. The assembly of claim 15, wherein the shell has a base (34) and a bowl-shaped liner (100) attached inside the shell adjacent the base of the shell.

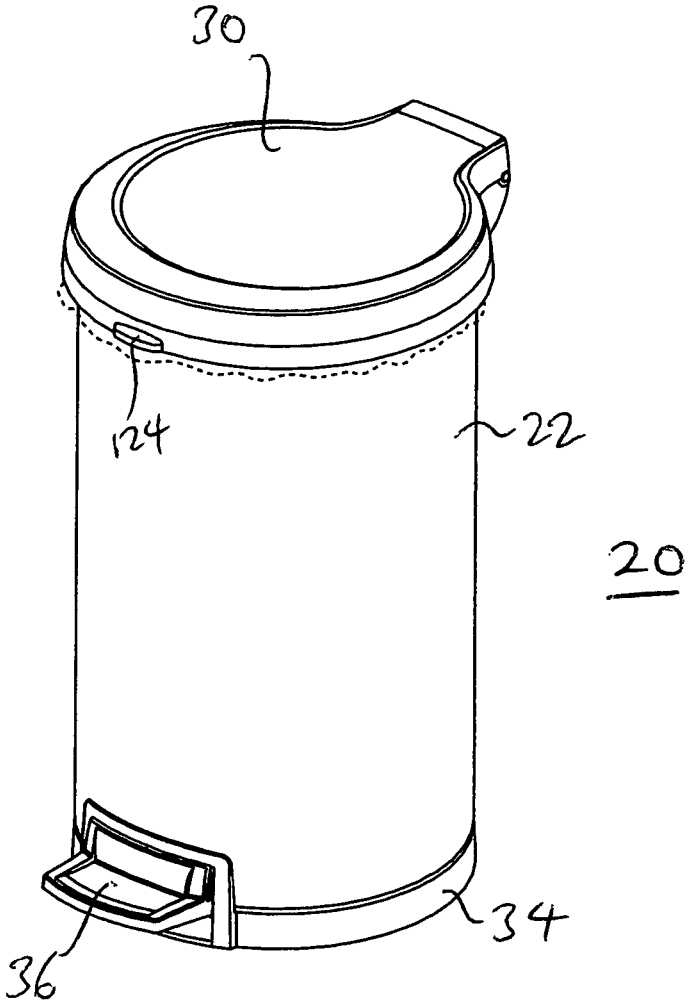


FIG. 1

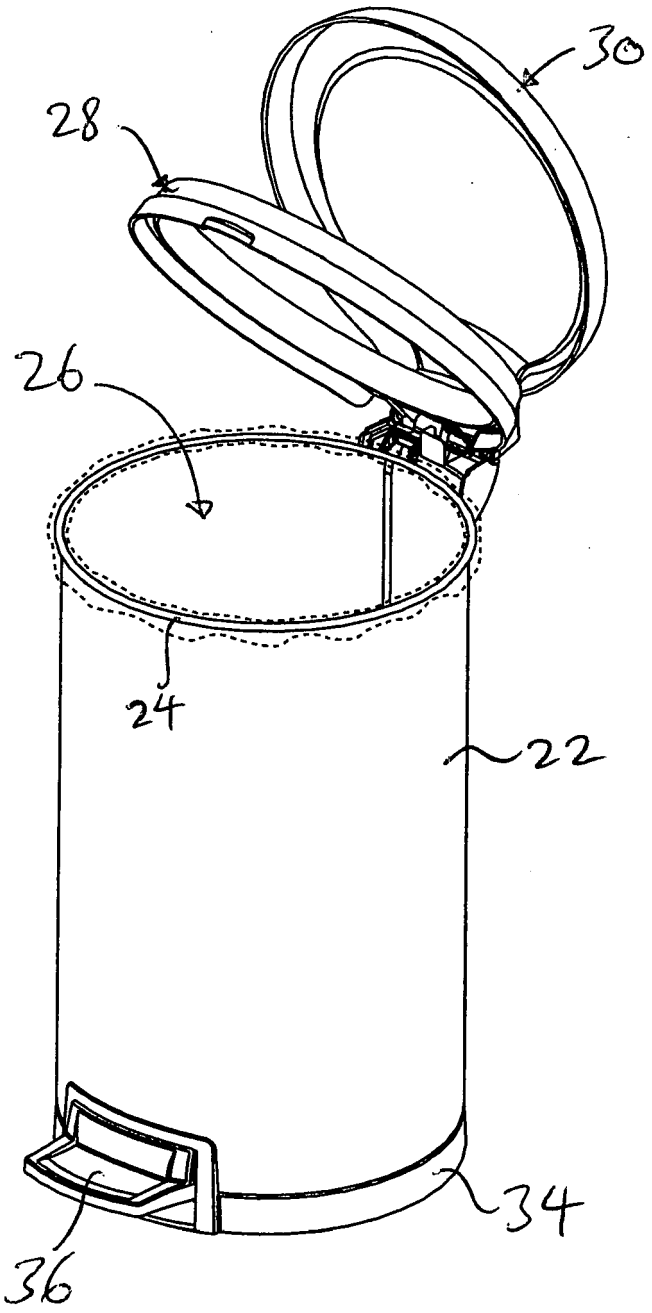


FIG. 2

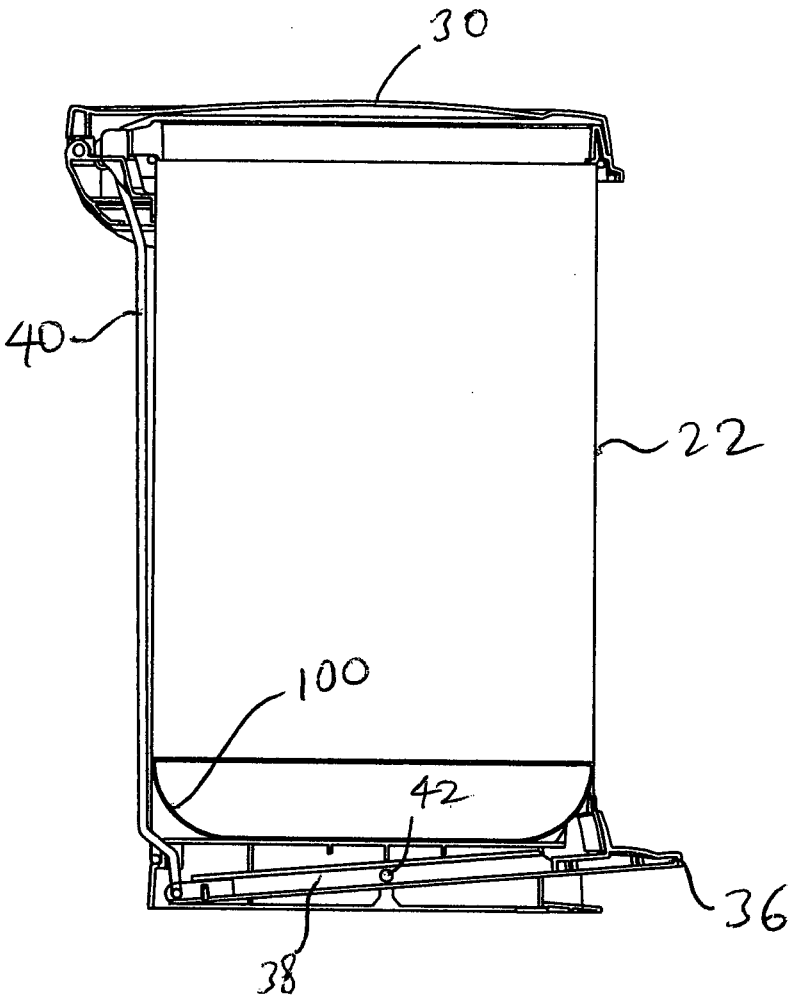


FIG. 3

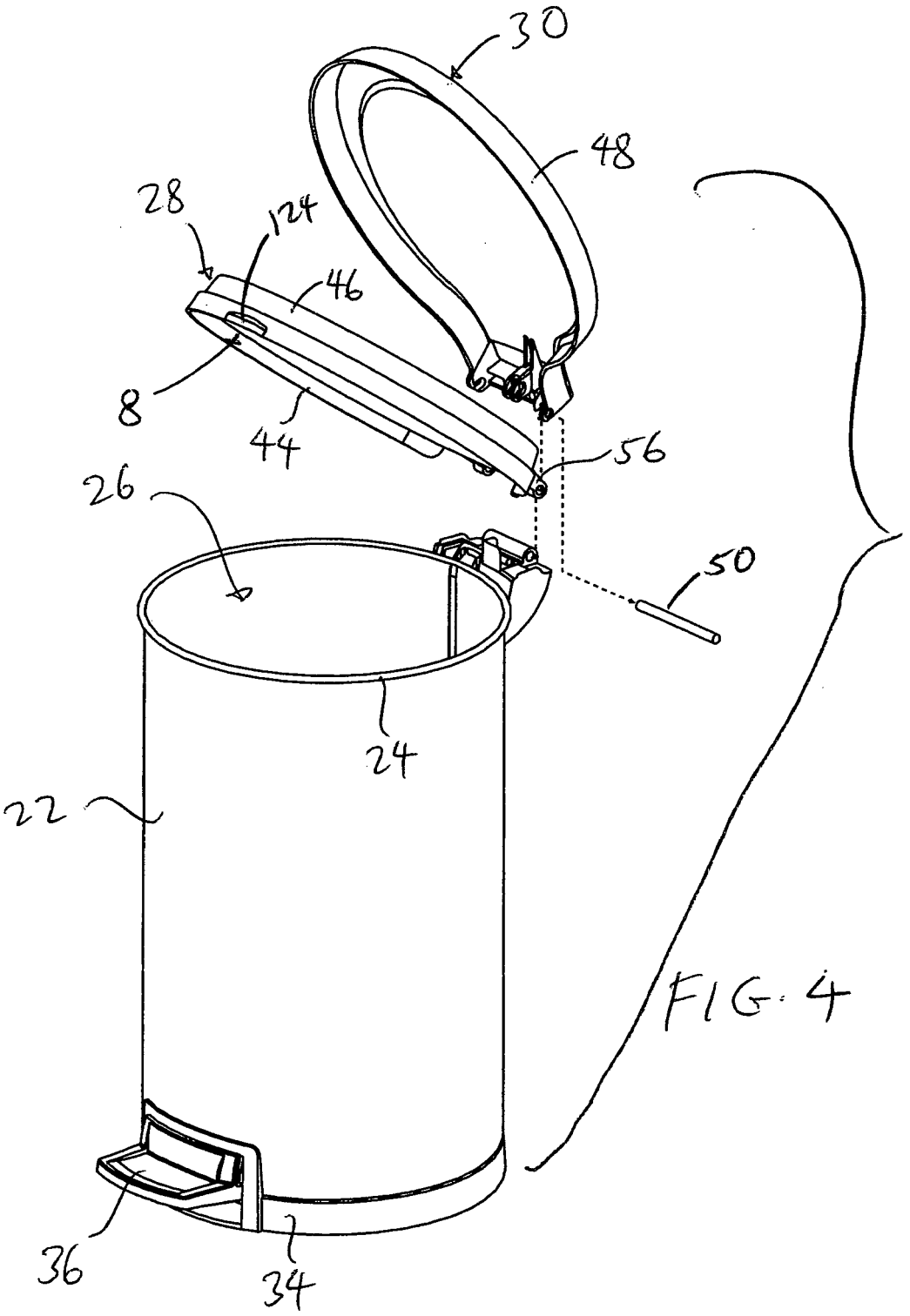
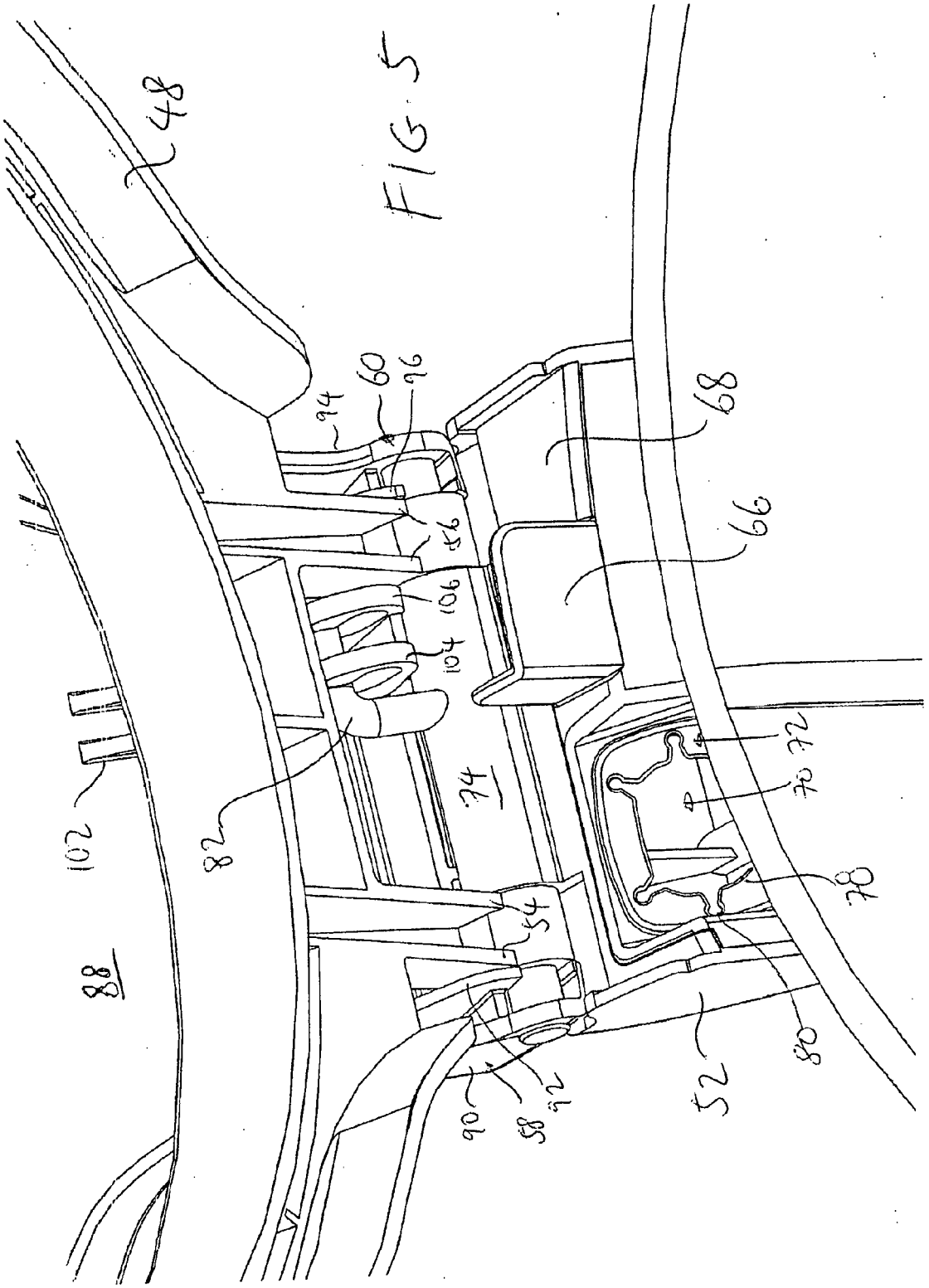


FIG. 4

FIG. 5



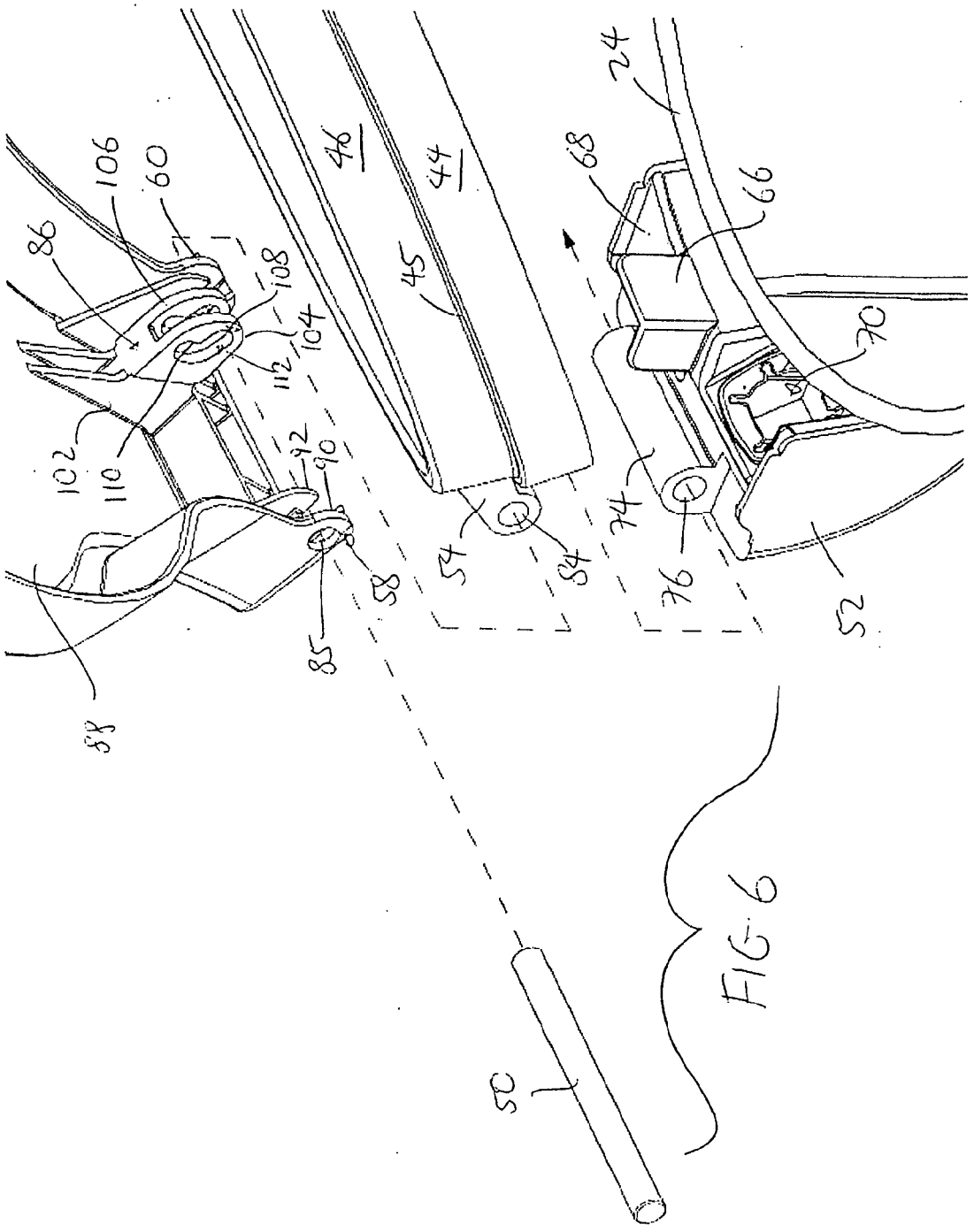

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FIG. 6

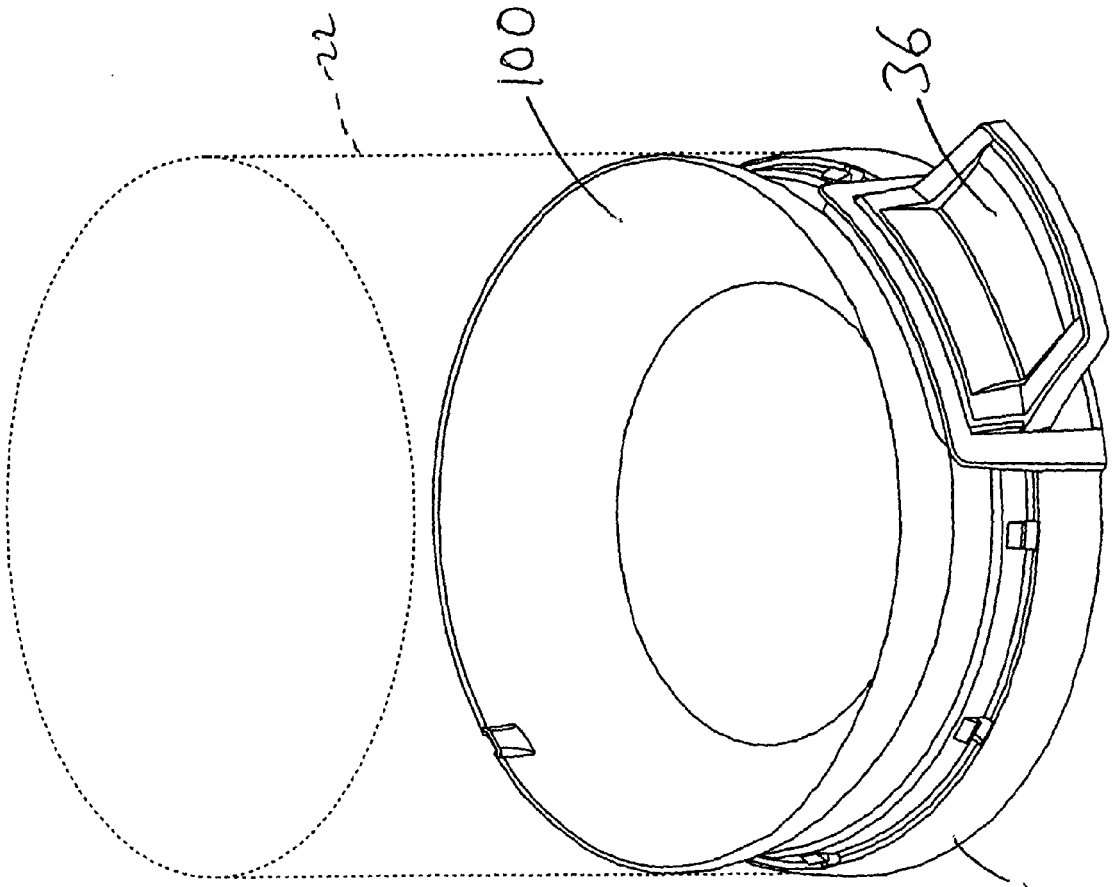
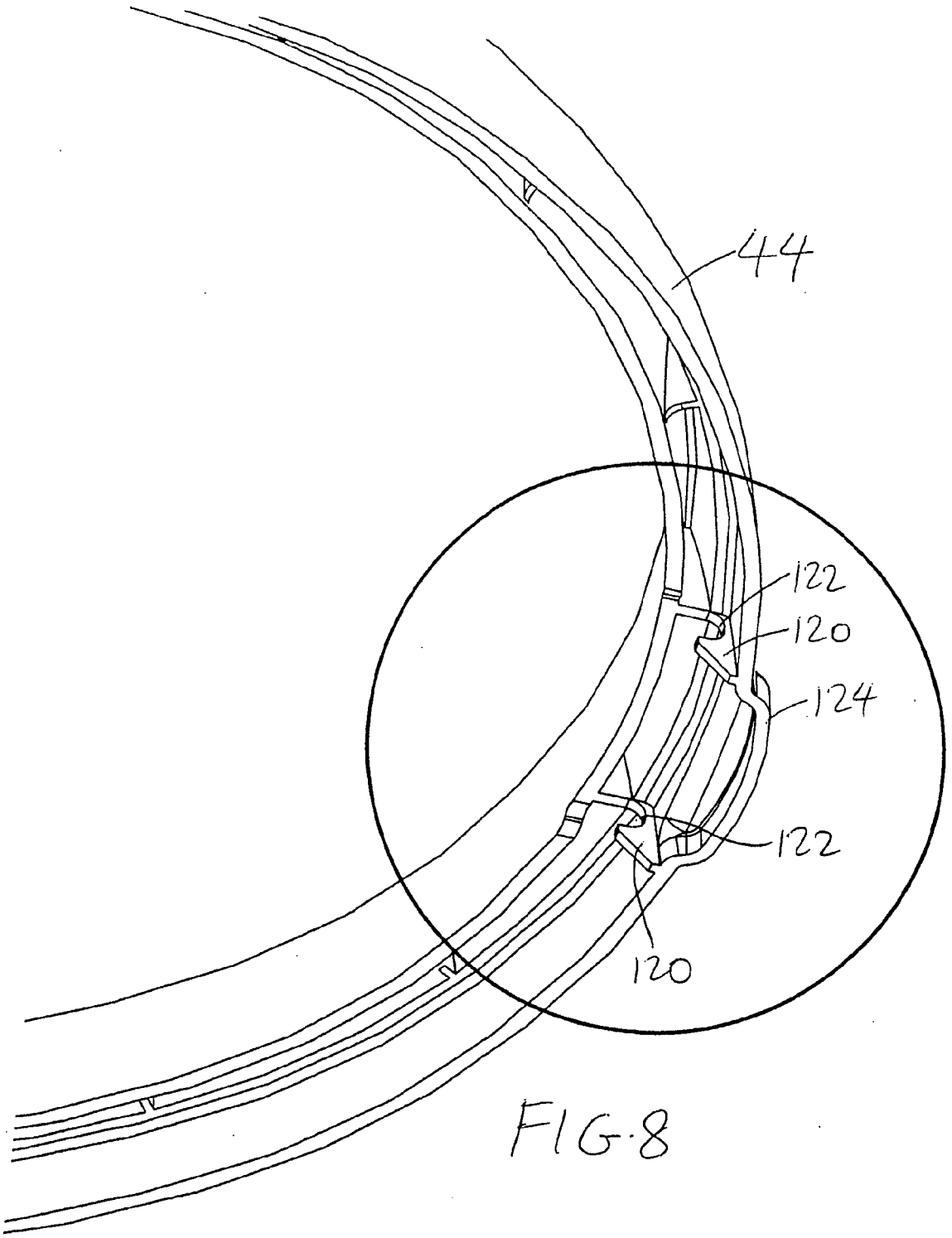


FIG. 7



FIG·8

European Patent Office

EUROPEAN SEARCH REPORT

Application Number
EP 07 02 2311

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 Y A	DE 91 09 462 U (O. SCHLÖTEL, JR.) 26 September 1991 (1991-09-26) * the whole document *	1,4,6,7, 13 15,16, 18,19 2,5,10, 12,14,17	INV. B65F1/06 B65F1/16 ADD. B65F1/04
X Y A	DE 75 03 716 U (RHEINWERK MEISENBURG & AHLEFF GMBH) 14 August 1975 (1975-08-14) * the whole document *	1-3,6,7 8,9,15, 16,18,19 10,13	
X Y	US 2005/205579 A1 (M. BUCHALTER ET AL.) 22 September 2005 (2005-09-22) * paragraph [0020] - paragraph [0027] * * figures 1-7 *	12 8,18	
Y	CH 273 648 A (W. LANG) 28 February 1951 (1951-02-28) * the whole document *	9,19	
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The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	19 February 2008	Smolders, Rob

CATEGORY OF CITED DOCUMENTS

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

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

EPO FORM 1503 03.82 (P04C01)

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Application Number
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CLAIMS INCURRING FEES

The present European patent application comprised at the time of filing more than ten claims.

☐ Only part of the claims have been paid within the prescribed time limit. The present European search report has been drawn up for the first ten claims and for those claims for which claims fees have been paid, namely claim(s):

☐ No claims fees have been paid within the prescribed time limit. The present European search report has been drawn up for the first ten claims.

LACK OF UNITY OF INVENTION

The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

see sheet B

☐ All further search fees have been paid within the fixed time limit. The present European search report has been drawn up for all claims.

☒ As all searchable claims could be searched without effort justifying an additional fee, the Search Division did not invite payment of any additional fee.

☐ Only part of the further search fees have been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the inventions in respect of which search fees have been paid, namely claims:

☐ None of the further search fees have been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the invention first mentioned in the claims, namely claims:

☐ The present supplementary European search report has been drawn up for those parts of the European patent application which relate to the invention first mentioned in the claims (Rule 164 (1) EPC).

European Patent Office

LACK OF UNITY OF INVENTION
SHEET B

Application Number
EP 07 02 2311

The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

1. claims: 1-9

Trash can assembly comprising a shell having an enclosing wall that has an uper edge and a lid pivotably connected to the upper edge, and further comprising a trim pivotably connected to and seated on the upper edge, whereby the lid is seated on the trim when the lid is closed, and wherein the trim and the lid pivot about the same pivot axis.

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2. claims: 10,11

Trash can assembly comprising a shell having an enclosing wall that has an uper edge and a lid pivotably connected to the upper edge, and further comprising a base and a bowl-shaped liner insert attached inside the shell adjacent the base of the shell.

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3. claim: 12

Trash can assembly comprising a shell having an enclosing wall that has an uper edge and a lid pivotably connected to the upper edge, and further comprising a hinge housing provided on the enclosing wall adjacent the upper edge and a bag tuck opening provided in the hinge housing.

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4. claims: 13,14

Trash can assembly comprising a shell having an enclosing wall that has an uper edge and a lid pivotably connected to the upper edge, and further comprising an annular lip which extends outwardly beyond the wall of the shell on which the lid is seated when closed.

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5. claims: 15-19

Trash can assembly comprising a shell having an enclosing wall that has an uper edge and a lid pivotably connected to the upper edge, and further comprising an annular lip which extends outwardly beyond the wall of the shell, a trim pivotably connected to the upper edge and having a locking element that removably engages a portion of the upper edge, a pivot shaft that extends through a portion of the trim and a portion of the lid, wherein the trim is seated on the upper edge, and the lid is seated on the trim when the lid is closed.

ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 07 02 2311

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.

19-02-2008

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EPO FORM P0459

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