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(56) Documents Cited:
WO 2005/079408 A2 **JP 2007160032 A**
US 3484875 A **US 3475767 A**
US 3428967 A **US 20010044953 A1**

(58) Field of Search:
INT CL **A47K**
Other: **Online: WPI, EPODOC**

(54) Title of the Invention: **Disposable waste bag**
Abstract Title: **Toilet waste bag**

(57) A waste bag 3 for a waterless toilet system, the waste bag comprises an inner portion 7, 8 and an outer portion 6. The outer portion 6 surrounds the inner portion 7, 8 and is characterised by a drawstring 9. The outer portion is shaped to allow the bag to be securely supported by a clamping platform (2 Fig 3) of the waterless toilet system in such a manner that the inner portion of the bag extends completely across an aperture of the clamping platform. The inner portion of the bag comprises an upper layer 7 and a lower layer 8, where an outer edge of the upper layer is joined to an inner edge of the outer portion by a perforated line of separation, and where an outer edge of the lower layer is contiguous with an inner edge of the outer portion and the lower layer is expandable to form a receptacle for waste matter.

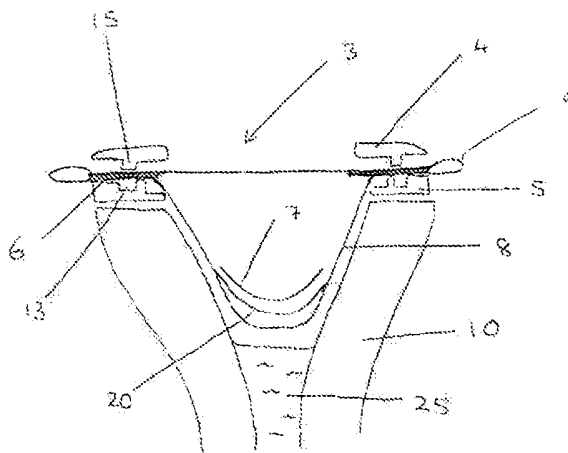


Figure 6A

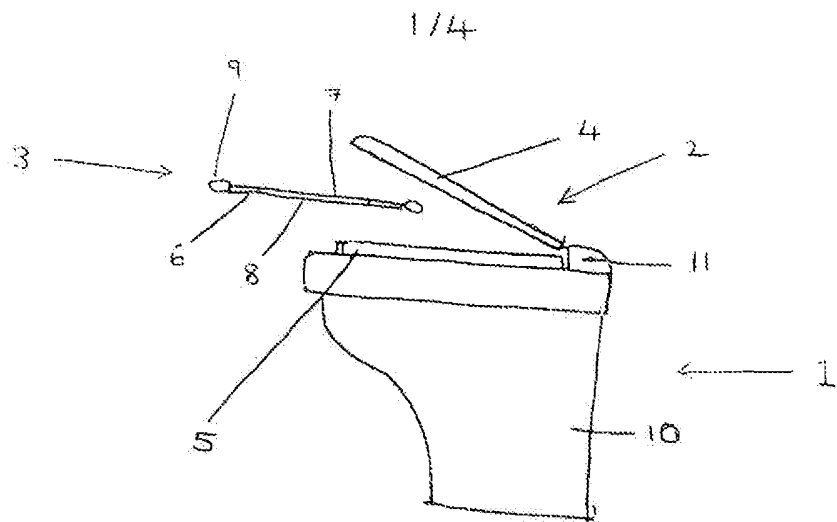


Figure 1

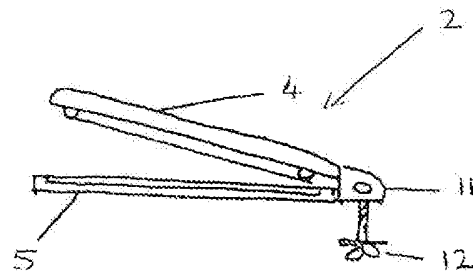


Figure 2

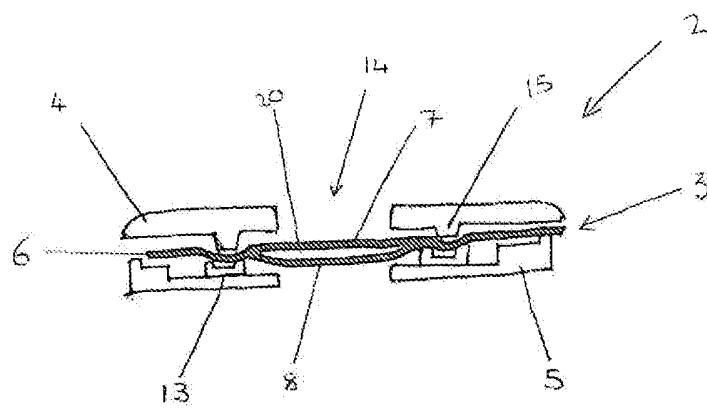


Figure 3

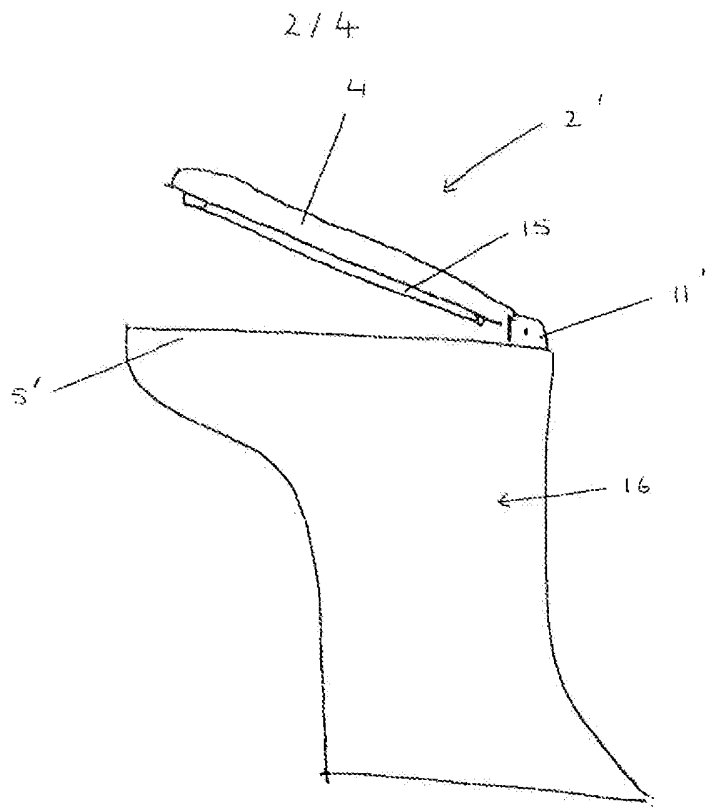


Figure 4

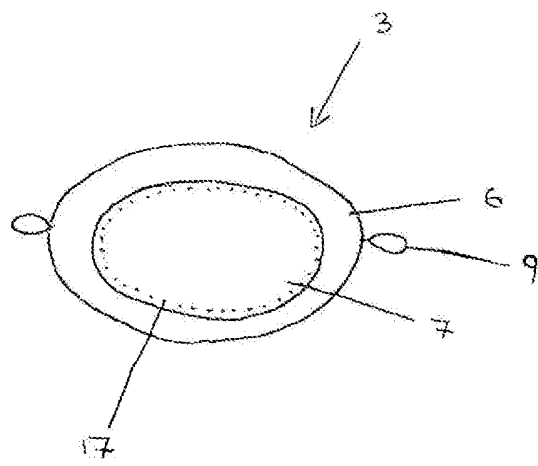


Figure 5

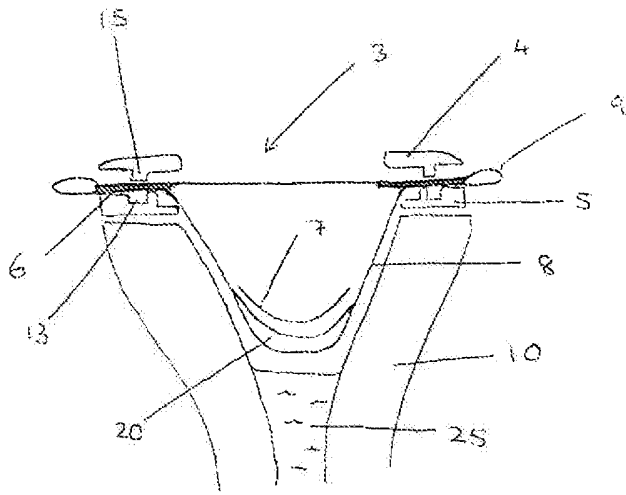


Figure 6A

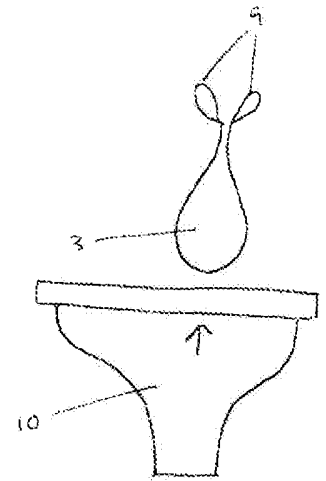


Figure 6B

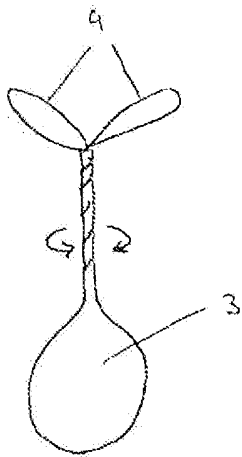


Figure 6C

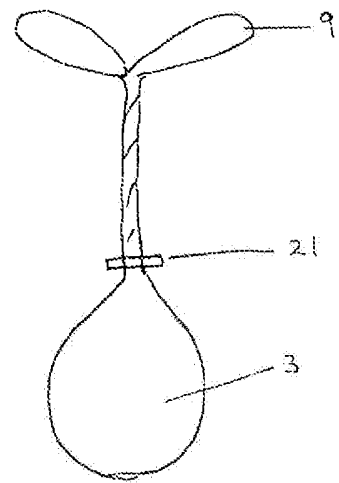


Figure 6D

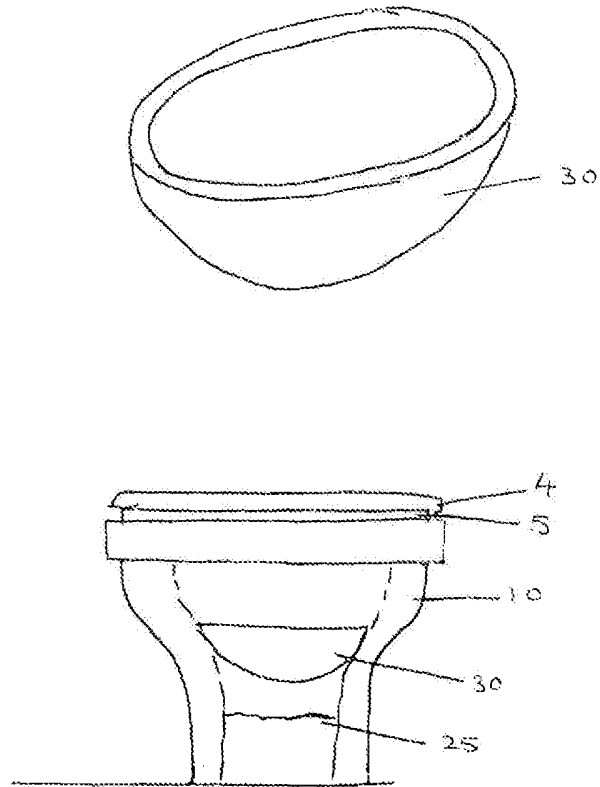


Figure 7

TITLE

Disposable Waste Bag

DESCRIPTION

5 Field of Invention

The present invention relates to waterless and portable toilets. The present invention provides an improved disposable waste bag for use with a waterless toilet. A waterless toilet system using the improved disposable waste bag is also provided. The waterless toilet system may be portable.

10

Background

Conventional flushing toilets are relatively wasteful, requiring several litres of water to be used at each flush. In order to reduce this waste of water there is a desire to provide toilets which either minimise water use or are entirely waterless.

15

It is also necessary for conventional flushing toilets to be permanently connected to both a water supply and a functioning sewerage system. Many, many locations worldwide do not have both a water supply and a sewerage system suitable for flushing toilets. Furthermore, the need for a flushing toilet to be permanently
20 connected to a water supply and sewerage system means that flushing toilets have to be fixed in position and cannot be portable. In light of this, there is a desire to provide toilets that do not require a connection to a water supply or a sewerage system and that are portable.

25 Many such toilets have been proposed. Typically, the toilets are portable and substantially comprise a platform that can either be mounted on a stand that elevates the platform above a surface or includes means for supporting the platform above the surface. The platform has a central aperture and acts as a toilet seat. The portable toilet will also comprise a receptacle for receiving waste matter that may be
30 positioned below the aperture of the platform when the toilet is in use. After use the receptacle is either emptied and re-used or is discarded.

A known embodiment of a portable toilet is waterless and comprises a receptacle that is substantially a plastic waste bag and the platform additionally comprises clamping means around the edge of the aperture for supporting the waste bag therefrom. The clamping means comprises a rim about which the upper edge of a waste bag may be
5 located and a cooperatively formed hinged upper member which may be lowered into position around the rim in order to clamp the upper edge of a waste bag therebetween. The hinged upper member has the same appearance as a conventional toilet seat. The rim is formed around the edge of the aperture formed through the platform and the upper member has a cooperatively positioned aperture formed therethrough in the
10 same manner as a conventional toilet seat.

In this portable toilet, after a waste bag has been used the hinged upper member is lifted to unclamp the waste bag. The waste bag is then lifted out of position and disposed of. This process can be unpleasant and unsanitary as it is necessary to
15 support the waste bag as it is unclamped from the platform. This can involve a person placing their hands inside the waste bag in places where the bag may have been in contact with waste matter. Furthermore, after the waste bag has been unclamped it is necessary to manually seal the bag using any sealing means that may be present along the open portion of the waste bag.

20

In light of the above, there is a need for an improved waste receptacle for use waterless toilet system wherein the waste receptacle is sanitary and less unpleasant to unload after use. There is also a need for a waterless toilet system for use with an improved waste receptacle that is capable of use either as a replacement for a
25 conventional toilet or in locations where there is no access to a water supply or a sewerage system. It is also preferable that any such toilet system should be portable.

Summary of Invention

The present invention provides a disposable waste bag for use with a waterless toilet
30 system that comprises a clamping platform for supporting the waste bag, wherein:

the waste bag comprises an inner portion and an outer portion;

the outer portion of the bag surrounds the inner portion, has a draw-string and has a shape that allows it to be securely supported by the clamping platform of the waterless toilet system in such a manner that the inner portion of the bag extends completely across an aperture of the clamping platform; and

5 the inner portion of the bag comprises an upper layer and a lower layer; an outer edge of the upper layer being joined to an inner edge of the outer portion by a line of separation, an outer edge of the lower layer being contiguous with an inner edge of the outer portion and the lower layer being expandable to form a receptacle for waste matter.

10

The disposable waste bag of the present invention is used with a waterless toilet in the following manner. A clamping means of the clamping platform of the waterless toilet is opened and the disposable waste bag is placed in position in the clamping platform such that the outer portion of the waste bag is in a position to be clamped by the
15 clamping means, the inner portion of the waste bag extends across the aperture of the clamping platform and the upper layer of the inner portion is on the top side of the waste bag. The clamping means is then closed so as to clamp the waste bag in position. A user then presses on the upper layer of the inner portion of the waste bag so as to separate the upper layer of the inner portion from the outer portion along the
20 line of separation. Separating the upper layer of the inner portion from the outer portion also serves to expand the lower layer of the waste bag such that it forms a receptacle for waste matter. The user is then free to use the waterless toilet in a conventional manner.

25 In order to allow the lower layer of the inner portion of the waste bag to expand it may initially be folded such that pressing on the lower layer opens the folds and expands the layer. Alternatively, the lower layer of the waste bag may be formed of an expandable material.

30 The positioning of the waste bag according to the present invention in a waterless toilet is much easier and simpler than positioning a waste bag according to the prior art. This is because it is not necessary to locate an opening of the waste bag around a

rim of the clamping platform. This process can be fiddly as the whole of the opening of the waste bag must be carefully located ensuring there are no gaps. In contrast, the waste bag of the present invention can simply be placed in the appropriate position on the clamping platform and the clamping platform can then be closed.

5

After a user has used the waterless toilet they may then dispose of the waste bag. First, the waste bag is unclamped from the clamping platform in the conventional manner. The user then picks up the waste bag by means of the draw string. Doing this closes the waste bag above the waste receptacle formed by the lower layer of the inner
10 portion. The user may then seal the bag in a suitable manner and then dispose of the bag. Picking up the waste bag by the draw string ensures the user does not risk coming into contact with waste matter present in the waste bag. Furthermore, the picking up the waste bag by the draw string acts to close the waste bag under the action of its own weight.

15

As will be readily appreciated, removal of the waste bag of the present invention is much easier and more sanitary than removing a waste bag according to the prior art. In particular, the waste bag can be simply picked up by the draw string without the need to reach into the waste bag or the need to manually gather the top of the bag with
20 the associated risks of coming into contact or spilling waste matter located within the bag.

Preferably a waste bag according to the present invention will contain an absorbent. That is, the waste receptacle portion of the waste bag may contain a material for
25 absorbing waste matter deposited therein. The absorbent material may include a gelling agent for solidifying liquid waste and/or an odour neutralising agent. The absorbent may be in the form of an absorbent lining. As will be readily understood, if the bag has an absorbent lining this lining may be attached to the lower layer of the inner portion of the bag in a suitable position. Additionally or alternatively, the
30 absorbent may be present in the form of loose material within the bag.

When a waste bag according to the present invention is used the lower wall of the inner portion is extended to form a waste receptacle. In order to ensure that any waste deposited in the waste receptacle of the waste bag is securely held and may not leak out it may be preferable that the portion of the lower wall that forms the waste
5 receptacle is made of a more resilient material than the rest of the waste bag. For example, if the waste bag is formed of a polymer it may be preferable that the relevant portion of the lower wall is formed of a thicker higher grade polymer. However, it is to be understood that the relevant portion of the lower wall may be formed of a different material from the rest of the waste bag if it is so desired.

10

Preferably a waste bag according to the present invention will be made of a polymer. This is because polymers are cheap and easy to manufacture on a large-scale and are readily available. A preferred embodiment of a waste bag according to the present invention is substantially made of polythene.

15

In a preferred embodiment of the present invention the line of separation joining the upper layer of the inner portion to the outer portion is a perforated tear line. This allows the upper layer of the inner portion to be easily separated from the outer portion by pressing on the upper layer.

20

In order to provide instructions for use of the bag or to provide space for advertising or any other graphics, a waste bag according to the present invention may have paper layer adhered to at least a portion of an upper surface of the waste bag. Preferably any such paper layer will be adhered to a top surface of the upper layer of the inner
25 portion of the waste bag such that when the waste bag is clamped in position in a waterless toilet system the aperture of the clamping platform is initially substantially covered by the paper layer.

30

The present invention also provides a waterless toilet system comprising a waste bag as described above and a clamping platform for supporting the waste bag, wherein the clamping platform has a central aperture and comprises clamping means for clamping

the waste bag across the central aperture. The clamping platform may be a substantially conventional platform according to the prior art.

5 Preferably, the clamping platform comprises a lower part and a hinged upper part between which a waste bag may be clamped and wherein the central aperture is formed through both the lower part and the hinged upper part. The hinged upper part may be similar to a conventional toilet seat but may have a part of the clamping means formed on its lower side. A cooperatively positioned second part of the clamping means may be formed on an upper side of the lower part of the clamping
10 platform. The clamping means may comprise a ridge formed around either the lower or upper part of the clamping platform and a cooperatively formed channel formed around the other of the lower or upper part of the clamping platform. In such an embodiment of the present invention a waste bag may be clamped in the clamping platform by lifting the upper part of the clamping platform, placing the waste bag in a
15 suitable position on the lower part of the clamping platform, then closing the upper part of the clamping platform such that the ridge becomes engaged with the channel and clamps the waste bag.

20 As will be apparent to the skilled person, a hinged upper part of a toilet system of the present invention may form a seat of the toilet system and may have a shape that makes it suitable for acting as such. In particular, an upper surface of a hinged upper part may have an ergonomic shape that makes it comfortable to sit upon.

25 In a first preferred embodiment of a waterless toilet system according to the present invention the clamping platform is mountable on a conventional toilet. This may be achieved by removing the toilet seat of the conventional toilet and replacing it with a clamping platform of the present invention using substantially the same mountings.

30 If the clamping platform of a waterless toilet system according to the present invention is mounted on a conventional toilet it may be preferable that the system further comprises a closure means that may be placed in a bowl of the toilet to seal the waterless toilet system. An exemplary closure means substantially comprises a rigid

bowl that may be simply placed in the bowl of the toilet above the water line. The bowl will then serve to support the waste bag of the toilet system above the waterline of the toilet and will ensure that the bag cannot accidentally fall into the water of the toilet, for example after it has been unclamped.

5

If the clamping platform of a waterless toilet system according to the present invention is not mounted on a conventional toilet it is preferable that the toilet system further comprises supporting means for supporting the clamping platform above a surface. A supporting means may be necessary in order to allow a waste bag to be
10 suspended below the clamping platform. A supporting means may be a pedestal, tripod or any other suitable means upon which the clamping platform may be supported that will be apparent to a person skilled in the art. The supporting means may be separate from the clamping platform and the clamping means may be mountable thereon. Alternatively, the supporting means may be integral with the
15 clamping platform. In a preferred embodiment of the present invention the supporting means comprises a pedestal that is substantially the same size and shape as a conventional toilet.

Preferably the present invention further comprises sealing means for sealing a waste
20 bag after use. The sealing means may comprise a hinged lockable closure that can close a used bag therein to seal the waste receptacle portion of the bag. An exemplary sealing means comprises a hinged opening ring having a locking closure means. After a waste bag has been used it can be picked up by the drawstring and then rotated such that the portion of the bag becomes twisted and thereby closes the waste receptacle
25 portion of the bag. The exemplary sealing means may then be opened, placed around the twisted portion of the waste bag and then locked tightly shut around the twisted portion in order to seal the bag. The present invention may comprise any other sealing means that will be apparent to the person skilled in the art. For example, a sealing means may comprise a tie or a bag clip.

30

Further details and features of the present invention will be apparent from the drawings and descriptions of the preferred embodiment of the invention, as set out below.

5 Drawings

Figure 1 is a side view of a first preferred embodiment of a toilet system according to the present invention;

Figure 2 is a cross-section through the clamping platform of Figure 1;

Figure 3 is a further cross-section through the clamping platform of Figure 1;

10 Figure 4 is a side view of a second preferred embodiment of a clamping platform of a waterless toilet system according to the present invention;

Figure 5 is a top view of a waste envelope of a waterless toilet system according to the present invention;

15 Figures 6A to 6D are schematic diagrams illustrating the use of a waste envelope of a waterless toilet system according to the present invention; and

Figure 7 is a cross-section through a waterless toilet system according to the present invention including a closure means.

20 A waterless toilet system 1 according to a first preferred embodiment of the present invention is shown in Figure 1. The system 1 comprises a clamping platform 2 and a waste bag 3. The clamping platform 2 comprises an upper part 4 and a lower part 5 and is mounted on the bowl 10 of a conventional toilet. The upper part 4 is joined to the lower part 5 by means of a hinge 11 in the same manner as a conventional toilet seat. A central aperture 14 is formed through the clamping platform 2 in the same
25 manner as a conventional toilet seat.

30 In Figure 1 the waste bag 3 is shown substantially separate from the clamping platform 2 and is shown in profile. The features of the waste bag can be seen more clearly in Figures 5 and 6A to 6D. The waste bag 3 has an outer portion 6 and an inner portion comprised of an upper layer 7 and a lower layer 8. The lower layer 8 of the inner portion is expandable to form a waste receptacle, as shown in Figure 6A. The waste bag 3 has a draw string 9 that passes around an outer edge of the outer portion

6. The upper layer 7 of the inner portion is joined to the outer portion around its circumference by means of a line of perforation 17. The upper layer 7 of the inner portion has a layer of paper adhered to its upper surface. An absorbent material 20 is contained within the waste bag 3 between the lower layer 8 and upper layer 7 of the inner portion.

As can be seen in Figure 2, the clamping platform 2 is mounted on the bowl 10 of the toilet by means of bolts 12 that fix the hinge 11 of the clamping platform to a rear portion of the bowl. As can be seen most clearly in Figure 3, the lower part 5 of the clamping platform 2 has a clamping channel 13 formed on its upper surface around the central aperture. A cooperatively positioned clamping ridge 15 is formed on the lower surface of the upper part 4 of the clamping platform 2. When the upper part 4 of the clamping platform 2 is closed against the lower part 5 the clamping ridge 15 engages with the clamping channel 13 and can clamp a waste bag 3 in position, as shown in Figure 3.

A second preferred embodiment of a toilet system 1 according to the present invention is shown in Figure 4. This embodiment is substantially the same as the first preferred embodiment with the exception that the toilet system comprises an integral pedestal 16 instead of the clamping platform 2 being mounted on the bowl 10 of a conventional toilet. The pedestal 16 has substantially the same shape as the bowl of a conventional toilet however it is not connected to a water supply or a sewerage system and is therefore portable. The clamping platform 2' of the second embodiment is substantially the same as the clamping platform 2 of the first embodiment with the exception that the lower part 5' of the platform 2' and the hinge 11' are integrally formed with the pedestal 16.

Figure 7 shows an optional additional component of the waterless toilet system 1 of the first preferred embodiment of the invention. In particular, the system 1 may additionally comprise a closure means 30. The closure means 30 is a rigid bowl that may be placed in the bowl 10 of the toilet to prevent the lower wall 8 of the waste bag 2 extending into the water 25 contained within the bowl of the toilet 10. The closure

means 30 is substantially separate from the rest of the toilet system 1 and can be removed after use.

The use of a toilet system according to the present invention 1 is as follows. The
5 upper part 4 of the clamping platform 2 is lifted such that the clamping ridge 15 is no longer engaged with the clamping channel 13, as shown in Figure 1. The waste bag 3 is then positioned on the lower part 5 of the clamping platform 2 such that the outer portion 6 of the waste bag is positioned over the lower part 5 of the clamping platform and the inner portion 7 of the waste bag extends over the central aperture 14 of the
10 lower part of the clamping platform. The upper part 4 of the clamping platform 2 is then lowered such that the clamping ridge 15 engages the clamping channel 13 and the outer portion 6 of the waste bag 3 is clamped therebetween, as shown in Figure 3.

The user then pushes on the upper layer 7 of the inner portion of the waste bag 3 such
15 that the upper layer separates from the outer portion along the line of perforation 17 and the lower layer 8 of the inner portion is extended to form a waste receptacle, as shown in Figure 6A. The user is then free to use the toilet system 1. As can be seen in Figure 6A the waste receptacle formed by the lower layer 8 of the inner portion contains an absorbent material 20 that will act to absorb any waste deposited therein.
20 The absorbent material 20 comprises a gelling agent, that acts to solidify liquid, and an odour neutraliser.

After the user has used deposited waste in the waste receptacle formed by the lower layer 8 of the inner portion of the waste bag 3 the user then removes the waste bag 3
25 in the following manner. The upper part 4 of the clamping platform 2 is lifted such that the clamping ridge 15 disengages from the clamping channel 13 to thereby release the waste bag 3. Whilst lifting the upper platform 4, the user may hold the draw string 9 of the waste bag 3 in order to prevent it falling into the bowl 10 of the toilet. After the waste bag 3 is released the user lifts it out of position by the draw
30 string 9 in the manner shown in Figure 6B. This will close the opening of the waste bag around a top end of the waste receptacle that is formed by the lower wall 8 of the inner portion of the waste bag 3. The user may then twist the waste bag 3 around in

order to further close the bag 3, as shown in Figure 6C. Finally, the user may seal the waste bag 3 using a plastic clip 21 or other suitable sealing means, as shown in Figure 6D. The waste bag 3 is then disposed of.

Claims

1. A disposable waste bag for use with a waterless toilet system that comprises a clamping platform for supporting the waste bag, wherein:
 - 5 the waste bag comprises an inner portion and an outer portion;
the outer portion of the bag surrounds the inner portion, has a draw-string and has a shape that allows it to be securely supported by the clamping platform of the waterless toilet system in such a manner that the inner portion of the bag extends completely across an aperture of the clamping platform; and
 - 10 the inner portion of the bag comprises an upper layer and a lower layer; an outer edge of the upper layer being joined to an inner edge of the outer portion by a line of separation, an outer edge of the lower layer being contiguous with an inner edge of the outer portion and the lower layer being expandable to form a receptacle for waste matter.
- 15 2. A waste bag according to claim 1 containing an absorbent.
3. A waste bag according to claim 1 or claim 2, wherein the bag has an absorbent lining.
- 20 4. A waste bag according to any of claims 1 to 3 wherein a central portion of the lower wall is made of a more resilient material than the rest of the bag.
5. A waste bag according to any preceding claim substantially made of polythene.
- 25 6. A waste bag according to any preceding claim wherein the line of separation joining the upper layer of the inner portion to the outer portion is a perforated tear line.
- 30 7. A waste bag according to any preceding claim having a paper layer adhered to at least a portion of an upper surface of the waste bag.

8. A waterless toilet system comprising a waste bag according to any of claims 1 to 7 and a clamping platform for supporting the waste bag, wherein the clamping platform has a central aperture and comprises clamping means for clamping the waste bag across the central aperture.

9. A toilet system according to claim 8 wherein the clamping platform is mountable on a conventional toilet.

10. A toilet system according to claim 9, further comprising closure means that may be placed in a bowl of the toilet to seal the waterless toilet system.

11. A toilet system according to claim 8 further comprising supporting means for supporting the clamping platform above a surface.

12. A toilet system according to claim 10 wherein the mounting means substantially comprises a pedestal.

13. A toilet system according to any of claims 8 to 12 further comprising sealing means for sealing a waste bag after use.

14. A toilet system according to any of claims 8 to 13, wherein the clamping platform comprises a lower part and a hinged upper part between which a waste bag may be clamped and wherein the central aperture is formed through both the lower part and the hinged upper part.

15. A toilet system according to claim 14 wherein the hinged upper part forms a seat of the toilet system.

16. A toilet system substantially as described herein and as illustrated in the drawings.

Amendments to the claims have been filed as follows

Claims

1. A disposable waste bag for use with a toilet system that comprises a clamping platform for supporting the waste bag, wherein:

- 5 the waste bag comprises an inner portion and an outer portion;
the outer portion of the bag surrounds the inner portion, has a draw-string and has a shape that allows it to be securely supported by the clamping platform of the toilet system in such a manner that the inner portion of the bag extends completely across an aperture of the clamping platform; and
- 10 the inner portion of the bag comprises an upper layer and a lower layer, in use; an outer edge of the upper layer being joined to an inner edge of the outer portion by a line of separation, an outer edge of the lower layer being contiguous with an inner edge of the outer portion and the lower layer being expandable to form a receptacle for waste matter.

15

2. A waste bag according to claim 1 containing an absorbent.

3. A waste bag according to claim 1 or claim 2, wherein the bag has an absorbent lining.

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4. A waste bag according to any of claims 1 to 3 wherein a central portion of the lower wall is made of a more resilient material than the rest of the bag.

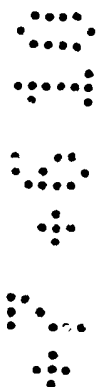
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5. A waste bag according to any preceding claim substantially made of polythene.

6. A waste bag according to any preceding claim wherein the line of separation joining the upper layer of the inner portion to the outer portion is a perforated tear line.

30

7. A waste bag according to any preceding claim having a paper layer adhered to at least a portion of an upper surface of the waste bag.



8. A toilet system comprising a waste bag according to any of claims 1 to 7 and a clamping platform for supporting the waste bag, wherein the clamping platform has a central aperture and comprises clamping means for clamping the waste bag across the central aperture.

9. A toilet system according to claim 8 wherein the clamping platform is mountable on a conventional toilet.

10. A toilet system according to claim 9, further comprising closure means that may be placed in a bowl of the toilet to seal the toilet system.

11. A toilet system according to claim 8 further comprising supporting means for supporting the clamping platform above a surface.

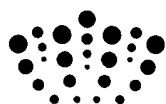
12. A toilet system according to claim 8 wherein the clamping platform is mounted on a pedestal.

13. A toilet system according to any of claims 8 to 12 further comprising sealing means for sealing a waste bag after use.

14. A toilet system according to any of claims 8 to 13, wherein the clamping platform comprises a lower part and a hinged upper part between which a waste bag may be clamped and wherein the central aperture is formed through both the lower part and the hinged upper part.

15. A toilet system according to claim 14 wherein the hinged upper part forms a seat of the toilet system.

16. A toilet system substantially as described herein and as illustrated in the drawings.



Application No: GB0921420.6

Examiner: Mrs Judith Peake

Claims searched: 1-16

Date of search: 15 April 2010

Patents Act 1977: Search Report under Section 17

Documents considered to be relevant:

Category	Relevant to claims	Identity of document and passage or figure of particular relevance
A	-	WO2005/079408 A2 (IRIZARRY-LUGO)
A	-	US3484875 A (EISENBERG)
A	-	US3428967 A (HUGHES)
A	-	US3475767 A (FRIESEN et al)
A	-	US2001/044953 A1 (GORDON)
A	-	JP2007160032 A (MURAHASHI HIROKO)

Categories:

X	Document indicating lack of novelty or inventive step	A	Document indicating technological background and/or state of the art.
Y	Document indicating lack of inventive step if combined with one or more other documents of same category.	P	Document published on or after the declared priority date but before the filing date of this invention.
&	Member of the same patent family	E	Patent document published on or after, but with priority date earlier than, the filing date of this application.

Field of Search:

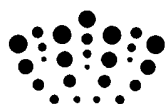
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A47K

The following online and other databases have been used in the preparation of this search report

Online: WPI, EPODOC



International Classification:

Subclass	Subgroup	Valid From
A47K	0011/04	01/01/2006
A47K	0011/00	01/01/2006