

(12) **UK Patent Application** (19) **GB** (11) **2 327 341** (13) **A**

(43) Date of A Publication 27.01.1999

(21) Application No 9715227.6

(22) Date of Filing 18.07.1997

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(51) INT CL⁶
A61G 7/02

(52) UK CL (Edition Q)
A4L LAAH L101

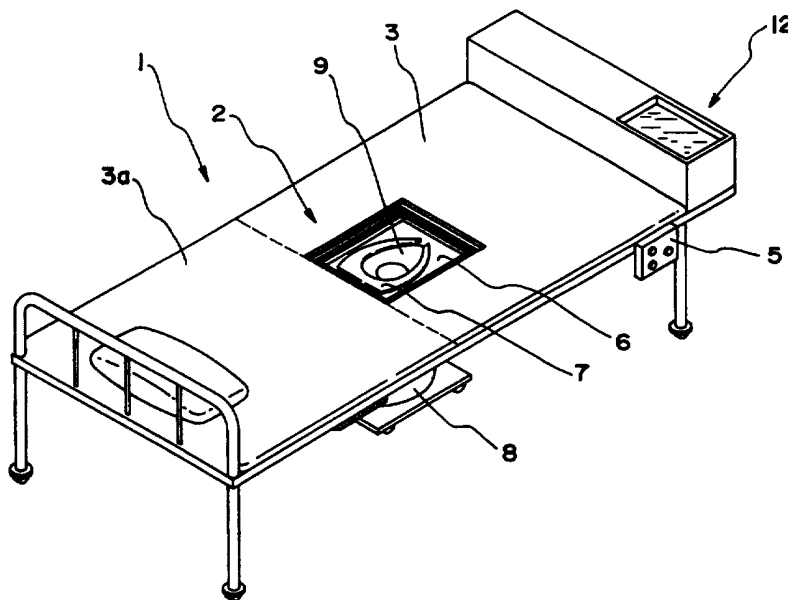
(56) Documents Cited
GB 1577937 A **EP 0558077 A1** **EP 0306560 A2**
JP 010113364 A **US 5342583 A** **US 4791686 A**
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(58) Field of Search
UK CL (Edition P) **A4L LAEE LAAH LACB LACD LACF**
INT CL⁶ **A47C 17/86 19/02 19/22 21/00 , A47K 11/00 ,**
A61G 7/02 9/00
On-line: WPI

(54) Abstract Title
Bed toilet with tiltable seat

(57) A nursed person's bed 1 with a flush toilet has a bed body 1 with an opening 2, which has a width that the hips of the nursed person laying on his or her back on the bed can be inserted through it. The opening 2 can be opened and closed by a cover 4 (figs 2-4), which is withdrawn to close the opening 2 and accommodated on the back of the bed body 3 to open the opening 2. A flush toilet 8 is disposed underneath the opening 2. In the opening 2, a toilet seat 7 is disposed, which has a somewhat cylindrical excreta guide 9 for reliably guiding excreta into the flush toilet 8. The toilet seat 7 can be vertically tilted by a lift 10 (fig 5) about a fulcrum provided at its end nearer the nursed person's head, and is tilted upward toward its free end to be in close contact with the hips of the nursed person (fig 6).

FIG. 1



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FIG. 1

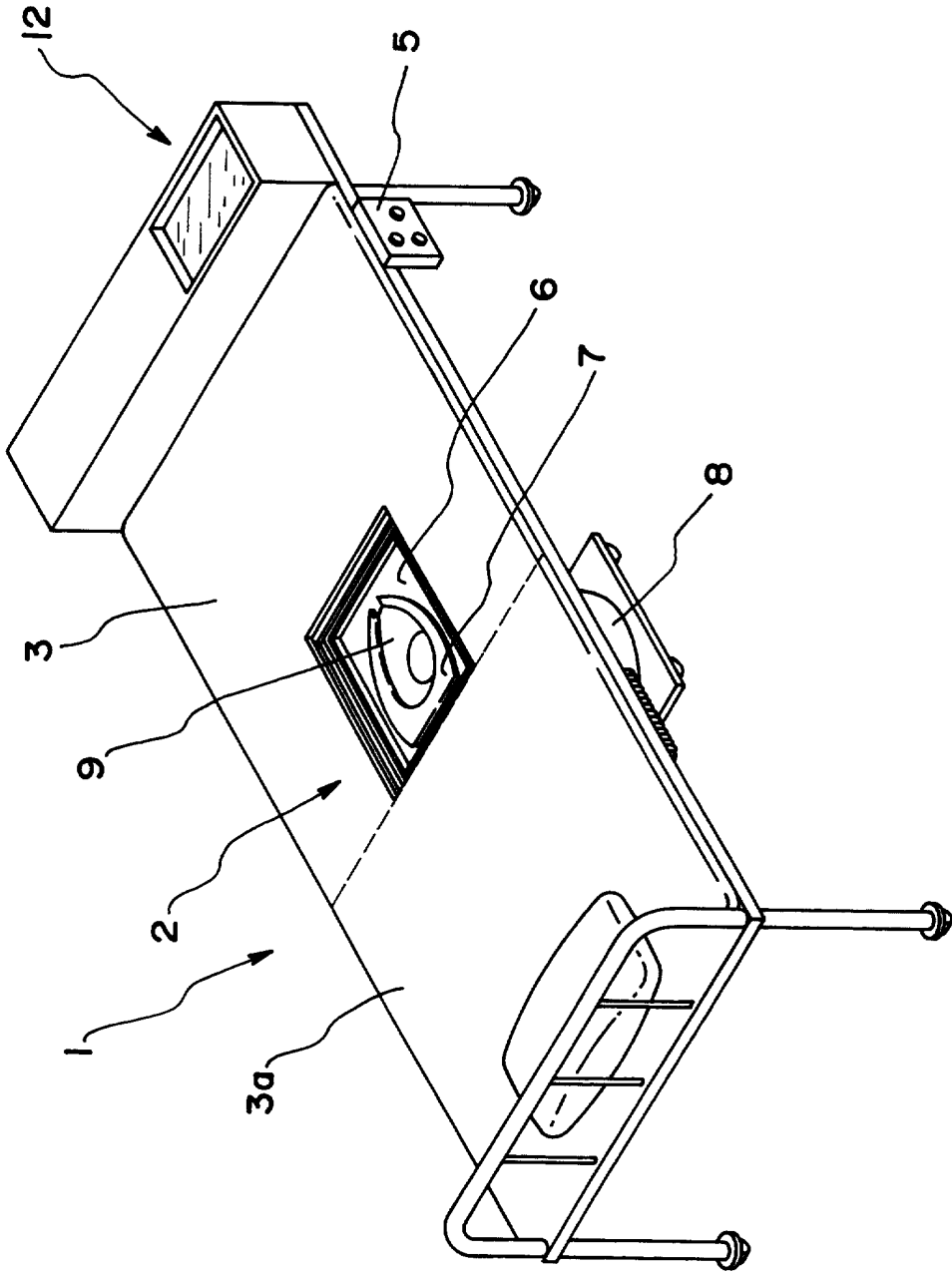


FIG. 2

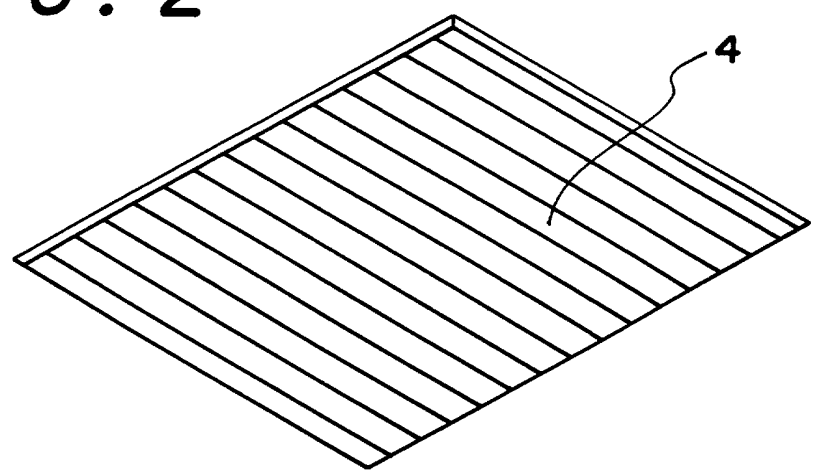


FIG. 3

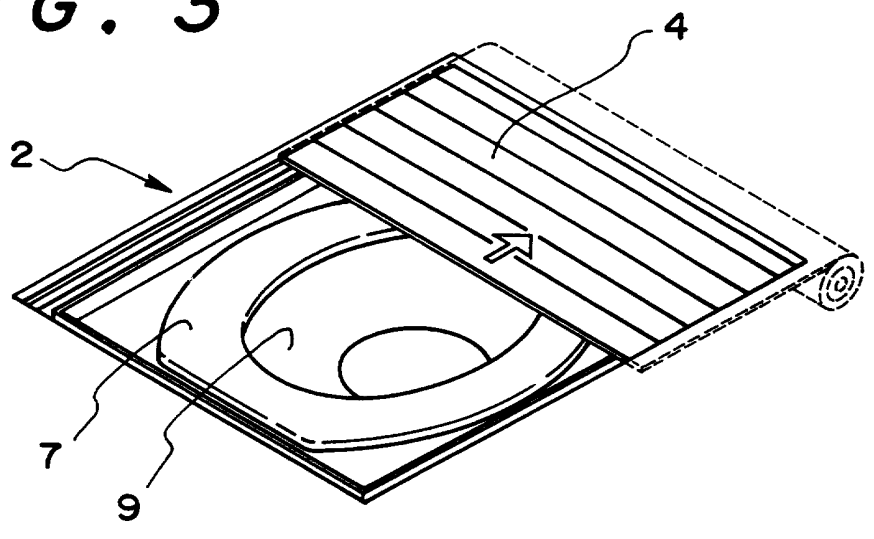


FIG. 4

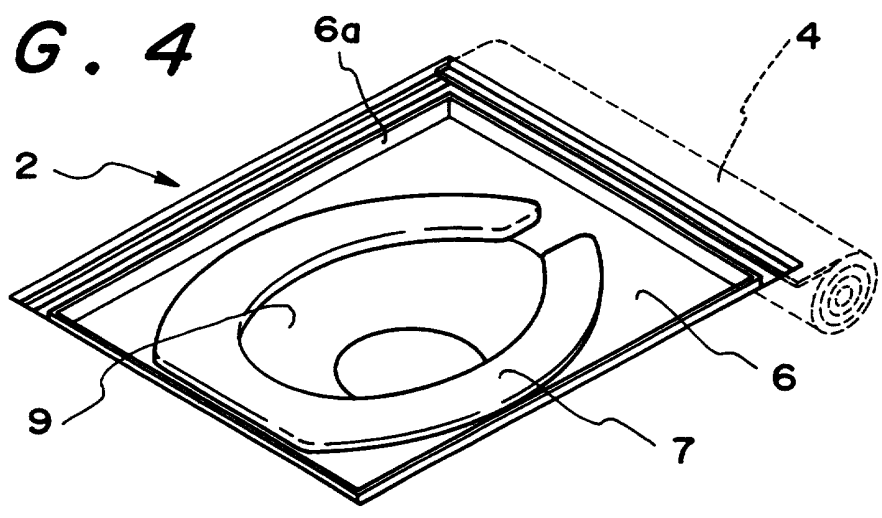


FIG. 5

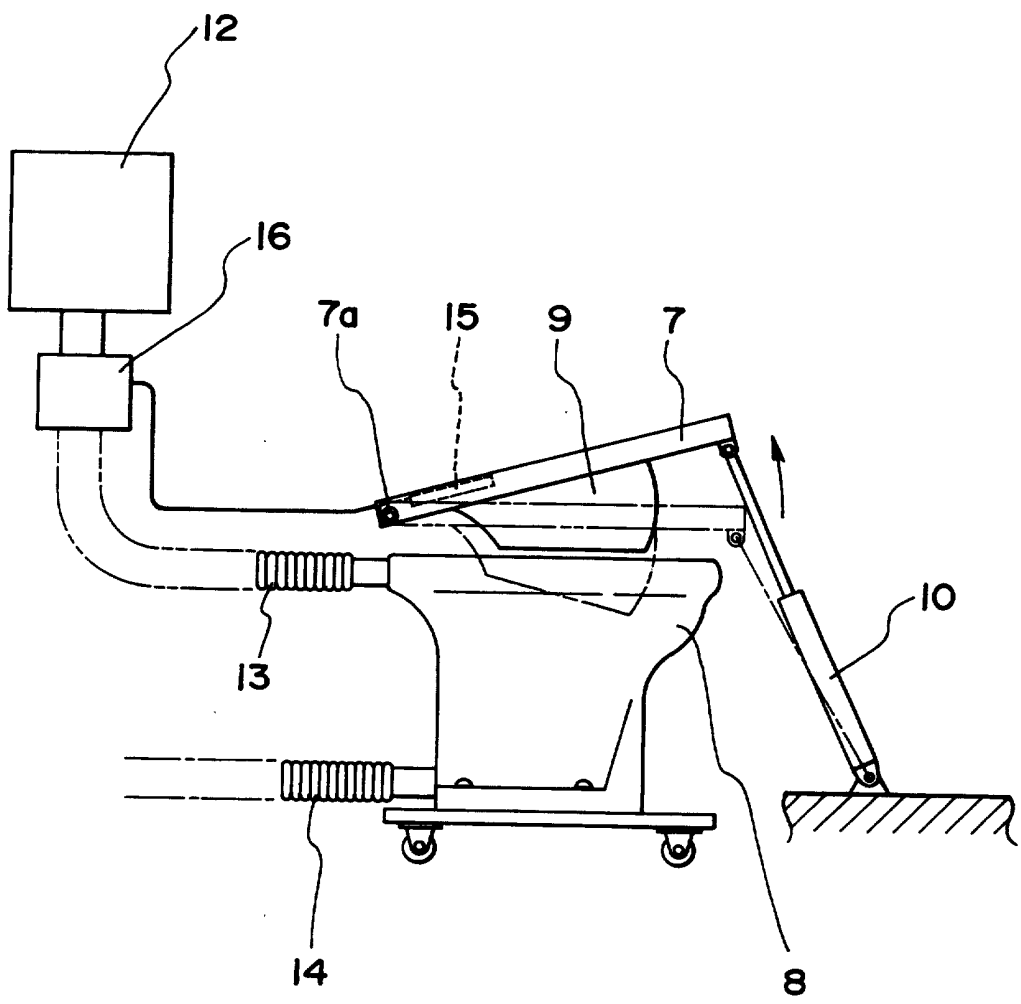


FIG. 6

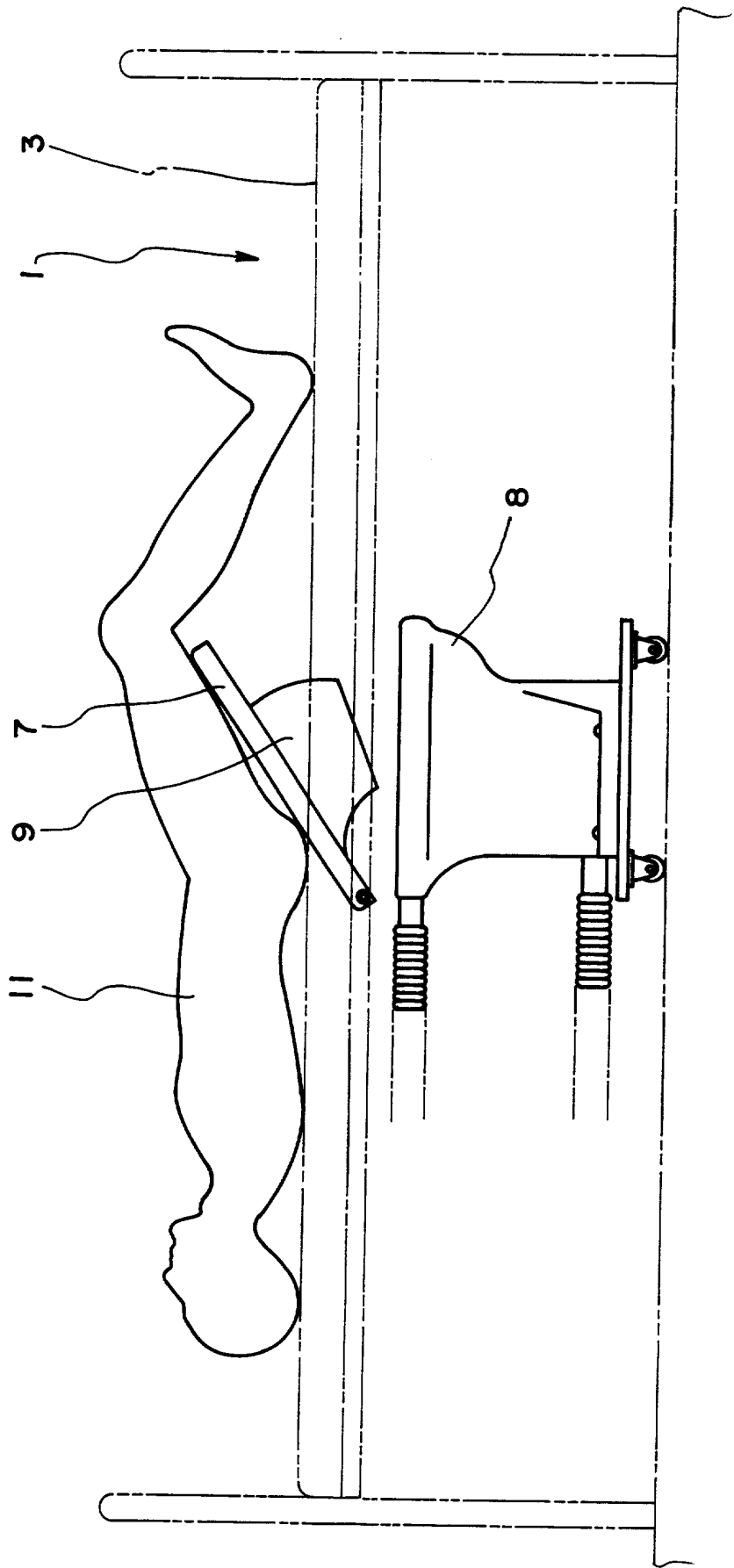


FIG. 7

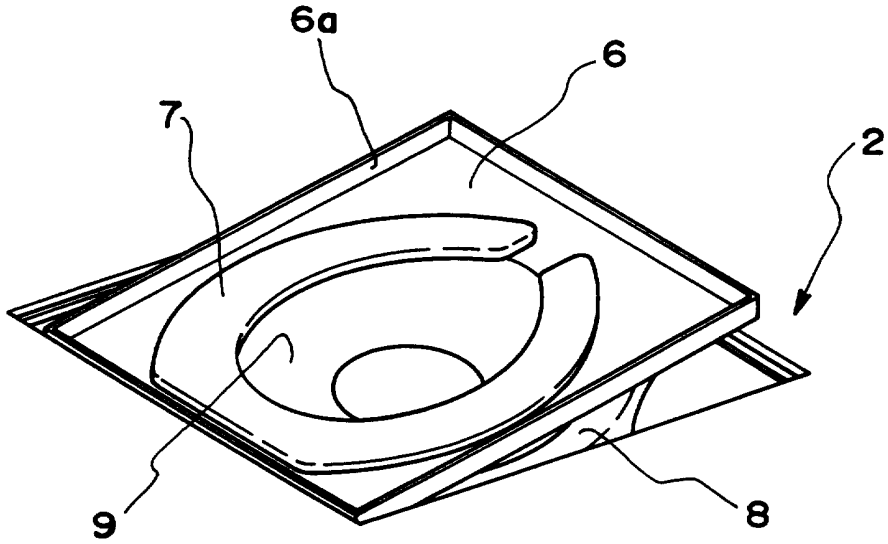
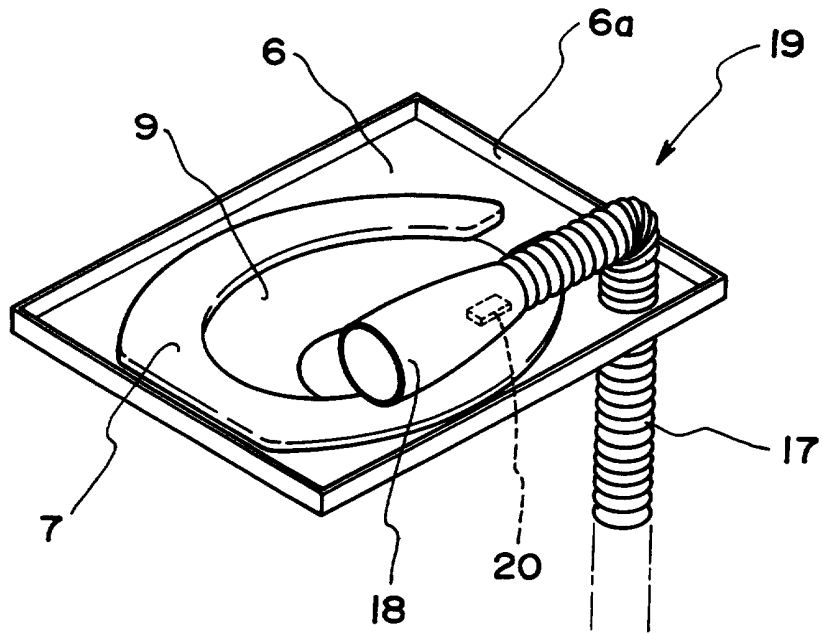


FIG. 8



NURSED PERSON'S BED WITH FLUSH TOILET

This invention relates to nursed person's beds for crippled or sick persons and, more particularly, a nursed person's bed with a flush toilet, which can be used by a crippled or sick person who cannot easily go to a toilet from a bed without leaving the bed.

A crippled or sick person who cannot easily go to a toilet, uses a portable simplified toilet whenever he or she defecates or relieves himself or herself on the bed.

However, when the crippled or sick person defecates or relieves himself or herself while lying on his or her back on the bed by using the simplified toilet, he or she cannot apply sufficient forces to the pertinent parts of the body to smoothly defecate or relieve himself or herself. Besides, great amounts of excreta may be attached to the pertinent parts of the body. Therefore, the simplified toilet cannot be easily used by the crippled or sick person.

Moreover, it requires skill and considerable labor to set the simplified toilet under the hips or take it out

therefrom after the defecation or relieving. Furthermore, after the defecation or relieving using the simplified toilet, it is necessary to dispose with the excreta, wash the simplified toilet as well as the lower half of the nursed person's body and remove odor in the room by means of ventilation. A nurse will take a great deal of time to do these tasks.

The invention is predicated on a basic concept that a toilet is assembled in a nursed person's bed to be used by a crippled or sick person.

A first object of the invention is to provide a nursed person's bed with a flush toilet, which permits a crippled or sick person to defecate or relieve himself or herself smoothly by applying sufficient forces to the pertinent parts of the body in a posture close to the one in the usual defecation or relieving even while lying on the bed, is free from the possibility of attachment of great amounts of excreta to the pertinent parts of the body, and requires only water washing the toilet after the defecation or relieving, making it unnecessary for the nurse to dispose with the excreta, wash the toilet as well as the lower half of the nursed person's body or remove odor from the room by ventilation or the like.

A second object of the invention is to permit hot water, as used to wash the lower half of the body of the person lying on the bed after the defecation or relieving, to be led smoothly into the flush toilet without possibility of running-over.

A third object of the invention is to permit a nursed person's bed with a flush toilet, which can be immediately restored after the defecation or relieving to a state that one can lie on it quite sanitarily.

Fig. 1 is a perspective view showing a nursed person's bed with a flush toilet according to the invention;

Fig. 2 is a view for describing the operation of a cover in the nursed person's bed with a flush toilet according to the invention;

Fig. 3 is another view for describing the operation of the cover in the nursed person's bed with a flush toilet according to the invention;

Fig. 4 is a further view for describing the operation of the cover in the nursed person's bed with a flush toilet according to the invention;

Fig. 5 is a view for describing a tilting operation of a toilet seat in the nursed person's bed with a flush toilet according to the invention;

Fig. 6 is a view illustrating the way of use of the nursed person's bed with a flush toilet according to the invention;

Fig. 7 is a fragmentary perspective view showing the manner of tilting of the toilet seat in the nursed person's bed with a flush toilet according to the invention; and

Fig. 8 is a fragmentary perspective view showing a second embodiment of the nursed person's bed with a flush toilet according to the invention.

Fig. 1 shows a nursed person's bed with a flush toilet embodying the invention. Reference numeral 1 designates the nursed person's bed with a flush toilet. The bed 1 has a bed body 3, on which a mattress, bedclothes, etc. are laid down. The bed body 3 has a rectangular opening 2 formed at an intermediate position. The opening 2 has a width that the hips of a person lying on the bed 1 can be inserted through it. The opening 2 can be opened and closed by a cover 4, which is in the form of a shutter guided along grooves or rails provided on the opposite sides of the opening 2.

As shown in Figs. 2 to 4, the cover 4 can be opened and closed by operating an operating panel 5, which is provided on one side of the bed 1. As it is opened, the

cover 2 is compactly wound into a roll and accommodated on the back of the bed body 3.

In the opening 2, a toilet seat 7 is disposed, which has a collector 6 with upright edge walls 6a. Underneath the toilet seat 7 a flush toilet 8 is disposed, which is installed on a base with casters for rolling over the floor. The toilet seat 7 has a roughly cylindrical excreta guide 9 depending from its outer periphery and with the width reduced with reducing level to reliably guide excreta into the flush toilet 8 without possibility of spattering.

As shown in Fig. 5, the toilet seat 7 can be vertically tilted about a fulcrum 7a provided at its end nearer the nursed person's head by an automatic lifter 10, which may be an air cylinder, an oil hydraulic cylinder, etc. The toilet seat 7 is operable by operating the operating panel 5, or by manually operating a crank tool or the like such that its free end is brought to a higher level than the plane of the bed body 3. A stopper or a limit switch (not shown) may be provided in the neighborhood of the toilet seat 7 and lift member 10 in order to hold the lift member 10 secured to the back surface of the bed body 3 or set upper and lower ends of tilting of the toilet seat 7.

Usually, when the nursed person defecates or relieves

himself or herself while lying on his or her back on the bed, he or she assumes a posture different from the posture of seating on the ordinary toilet seat. In this posture, he or she cannot apply sufficient forces to the pertinent parts of the body. In addition, since the pertinent parts of the body are not sufficiently exposed, great amounts of excreta are liable to be attached to these parts of the body. In contrast, the toilet seat 7 according to the invention, as shown in Fig. 6, can be set to a state that it is tilted upward toward its free end and in contact with the hips of the nursed person 11. In this state, the nursed person 11 can assume a posture, which is close to the posture of the ordinary defecation or relieving. This posture is suitable for the nursed person 11 to defecate or relieve himself or herself by applying stable forces to the pertinent parts of the body. Besides, the pertinent parts of the body can be sufficiently exposed to prevent attachment of the excreta to the pertinent parts of the body as much as possible.

Reference numeral 12 designates a water tank which is disposed at the rear end of the bed 1 and at a higher level than the bed body 3. Water for washing can be supplied from the water tank 12 into the flush toilet 8 via a bellows-like flexible water supply tube 13. Reference

numeral 14 is a bellows-like flexible draining tube, which is connected from the flush toilet 8 to a draining port for draining drainage thereto.

Since the water supply and draining tubes 13 and 14 are flexible and not twisted or bent by slightly moving the flush toilet 8, the flush toilet 8 can be pulled out together with the base with the casters in the inclined state of the toilet seat 7 side-wise from its position in the bed 1. It is thus possible to manually clean the flush toilet 8 carefully.

Reference numeral 15 designates a sensor, i.e., pressure sensor means, which is disposed on the toilet seat 7. When the hips lying on the bed are brought into contact with it, the sensor 15 detects the weight (or pressure) of the hips and generates a signal. Reference numeral 16 designates a water supply controller, which is provided on the water supply tube 13 or the joint between the water tank 12 and the water supply tube 13, and opens a valve according to a signal from the sensor 15, thus allowing water in the water tank 12 to be supplied to the flush toilet 8.

The water supply controller 16 is operated in an interlocked relation to the sensor 15 as follows. If the water supply controller 16 is adapted to cause water supply

immediately in response to a signal, which is generated from the sensor 15 when the hips of the lying person on the bed are brought into contact with the toilet seat 7, the timing of water supply to the flush toilet 8 is too early. A suitable timing of causing water supply is when the water supply controller 16 receives a signal, which is generated by the sensor 15 when the hips having been in contact with the toilet seat 7 are separated from the toilet seat 7. Instead of using the sensor 15 and the water supply controller 16, it is possible to cause water supply by manually operating a conventional water tank lever or the like.

The sensor 15 may be a temperature sensor means for detecting the temperature of the man's body or the like, an odor sensor means for detecting the odor of the excreta, etc. as well as the above pressure sensor means, and it may be provided in the flush toilet as well as in the toilet seat.

The nursed person's bed with a flush toilet having the construction as described above according to the invention is used as follows. The person lying on his or her back on the bed 1 is shifted to the left or right aside from the opening 2, and then the cover 4 is opened by operating the operating panel 5. Then, the person is brought to a lying

state such that his or her hips are found above the toilet seat 7. In the case where the nursed person's bed can be tilted, a front, or head side, portion 3a of the bed body 3 is tilted to tilt up the upper half of the body to a somewhat upright state. Even where the bed 1 is incapable of tilting a head side portion of the bed body 1, the toilet seat 7 can be tilted such that the hips of the nursed person 11 in contact with it are brought to a posture just like that of the ordinary defecation or relieving. The nursed person 11 thus can defecate or relieve in a posture permitting stable application of sufficient forces to this end.

Where the toilet seat is provided with a hot water washer, subsequent to the defecation or relieving the hips are washed with hot water. Where no hot water washer is provided, the nurse can wash the lower half of the body of the nursed person in the same posture as before with hot water or the like at hand. As it is used, the water is collected without running-over by the collector 6 with the upright edge walls to be led through the roughly cylindrical excreta guide 9 into the flush toilet 8. Subsequently, the flush toilet 8 is washed with water supplied from the water tank 12 either by the above sensor operation or manually.

Fig. 8 shows a different embodiment of the nursed person's bed with a flush toilet according to the invention. In this embodiment, the collector 6 of the toilet seat 7 is provided with an urine extractor 19. The urine extractor 19 is in the form of a tube 17, which has a lower end extending into the flush toilet and funnel-shaped contact member 18 provided at the other end. Using this urine extractor 19, the nursed person lying on his or her back on the nursed person's bed with a flush toilet according to the invention can reliably relieve himself or herself without possibility of running-over of urine. As the urine extractor 19, two different types, one for the man and the other for the woman, may be provided and adapted to be detachably mounted.

It is further possible to provide an urine sensor 20 for detecting urine in the urine extractor 19. The urine sensor 20 may be an electric conduction sensor means, which generates a signal when its electrodes are brought into conduction with each other by conductive urine, or an ammonia sensor means, which detects ammonia in urine. The urine sensor 20 may be connected to the water supply controller 16 to cause automatic water supply to the flush toilet 8 upon detection of urine by it.

As the urine sensor may be used a pressure sensor

means, a temperature sensor means, an odor sensor means, an electric conduction sensor means, an ammonia sensor means or any other sensor means so long as being capable of detecting the defecation or relieving.

As has been described in the foregoing, according to the invention a crippled or sick person who is laying on and incapable of leaving the bed, does not need to use a conventional simplified toilet, which it is difficult to set under the hips for the defecation or relieving and subsequently take out from under the hips, and with which it is difficult to make smooth defecation or relieving. Instead, the crippled or sick person lying on his or her back on the bed, can have his or her hips in close contact with the toilet seat, which is tilted upward toward its free end. This posture of the crippled or sick person is close the posture of the ordinary defecation or relieving, and is thus suitable for the defecation or relieving. Thus, he or she can apply sufficient forces to this end. In addition, since the pertinent parts of the body are sufficiently exposed, it is possible to prevent attachment of excreta to these parts of the body as much as possible. Furthermore, the flush toilet can be water washed after use. It is thus unnecessary for the nurse to take time for such tasks as the disposal with excreta, washing of the

flush toilet as well as the lower half of the nursed person's body, removal of odor from the room by ventilation, etc.

Where the cover is provided, which can be accommodated on the back side of the bed body to uncover the opening 2 for defecation or relieving and can be re-positioned so as to cover the opening in the bed afterwards, the

nursed person's bed may be used as an ordinary bed when defecation or relieving is not made, while permitting readily setting up the toilet in the bed for the excretion or relieving.

Where the flush toilet is provided with the flexible water supply and draining tubes, which are not twisted or bent by slightly moving the flush toilet, it is possible to take out the flush toilet from the position in the bed for careful cleaning.

Where the toilet seat is provided with the collector with the upright edge walls, hot water which is used to wash the lower half of the person lying on the bed after the defecation or relieving, can be collected without running-over in the collector and thence led into the flush toilet for disposal.

Where the toilet seat is provided with the urine extractor in the form of a flexible tube, which has a lower end extending into the flush toilet and a funnel-like

contact member provided at the other end, one who is lying on his or her back on the bed can reliably relieve himself or herself without possibility of running-over of urine.

Where the sensor for detecting the defecation or relieving is provided on the flush toilet or toilet seat and the water supply controller is provided between the sensor and the water tank to cause water supply to the flush toilet in response to the detection of defecation or relieving by the sensor, the nurse's care-taking can be further reduced, and the nursed person's bed with a flush toilet can be used more conveniently.

Where the urine extractor is provided with an urine sensor such as an electric conduction sensor means or an ammonia sensor means for detecting urine, water can be automatically supplied to the flush toilet in response to the detection of the relieving by the urine sensor, which is convenient for the user while also alleviating the nurse's care-taking.

Claims

1. A nursed person's bed with a flush toilet comprising a bed body with mattresses or the like laid down thereon, the bed body having an opening formed at an intermediate position, a flush toilet disposed underneath the opening, and a toilet seat located in the opening and having a somewhat cylindrical excreta guide depending from the outer periphery for reliably guiding excreta into the flush toilet, the toilet seat being capable of being tilted about a fulcrum provided at its end nearer the nursed person's head so that when the nursed person defecates or relieves himself or herself while lying on his or her back on the bed, it is tilted upward toward its free end so that it is in close contact with the hips of the nursed person and holds the nursed person in a posture, which is close to the posture of the ordinary defecation or relieving and suitable for the defecation or relieving.

2. The nursed person's bed with a flush toilet according to claim 1, which further comprises a cover capable of being accommodated on the back of the bed body to open the opening for defecation or relieving and withdrawn to close the opening.

3. The nursed person's bed with a flush toilet according to claim 1, wherein the flush toilet is provided

with a flexible water supply tube for supplying water for washing it and a flexible draining tube for draining drainage from it.

4. The nursed person's bed with a flush toilet according to claim 1, wherein the toilet seat is provided with a collector with upright edge walls.

5. The nursed person's bed with a flush toilet according to claim 1, wherein the toilet seat is provided with an urine extractor in the form of a tube, which has a lower end extending into the flush toilet and a funnel-like contact member provided at the other end for contact with a pertinent part of the body for the defecation or relieving.

6. The nursed person's bed with a flush toilet according to claim 1, which further comprises a sensor provided on the flush toilet or the toilet seat for detecting defecation or relieving, and a water supply controller provided between the sensor and a water tank for causing water supply from the water tank to the flush toilet to wash the flush toilet in response to the detection of defecation or relieving by the sensor.

7. The nursed person's bed with a flush toilet according to claim 5, wherein the urine extractor is an electric conduction sensor means or an ammonia sensor means

for detecting urine.

8. A bed comprising: a bed body having an opening provided at a position intermediate the ends of the bed; and a toilet disposed, in use, underneath the opening.

9. A bed as claimed in Claim 8 and further comprising a toilet seat located in the opening.

10. A bed as claimed in Claim 9 wherein the toilet set can be tilted about an axis located at the end of the seat nearer the head of the bed.

11. A bed as claimed in Claim 9 or 10 and further comprising an excreta guide depending from the outer periphery of the toilet seat for guiding excreta into the toilet.

12. A bed as claimed in any of Claims 8 to 11 and further comprising a removable cover provided over the opening.

13. A bed substantially as described herein with reference to Figure 1 of the accompanying drawings.



Application No: GB 9715227.6
Claims searched: 1-13

Examiner: Jeremy Philpott
Date of search: 27 July 1998

Patents Act 1977
Search Report under Section 17

Databases searched:

UK Patent Office collections, including GB, EP, WO & US patent specifications, in:
UK CI (Ed.P): A4L [LAAE, LAAH, LACB, LACD, LACF]
Int CI (Ed.6): A47C: 17/86, 19/02, 19/22, 21/00; A47K: 11/00; A61G: 7/02, 9/00
Other: On-line: WPI

Documents considered to be relevant:

Category	Identity of document and relevant passage	Relevant to claims
Y	GB 1577937 A (Elizabeth Matilda Howard) whole document & Figures, note page 1 lines 48-60.	3
X, Y	EP 0558077 A1 (Kimura Ind. Co. Ltd.) whole document, abstract & Figures, note tiltable buttock support 7.	1, 2, 4 & 8-12 (X) 3 & 6 (Y)
X	EP 0306560 A2 (Hidetsugu Nishiguchi) whole document & Figures, note especially Figure 2 & claim 4.	1, 3, 4 & 8-11
Y	US 5342583 (Jong E. Son) whole document & Figures.	5-7
Y	US 4791686 (Harusige & Kyoko Taniguchi) whole document & Figures, note col 1 line 58 to col 2 line 6.	6
X	US 2564135 (Alice Touchberry) whole document & Figures, note tiltable support 8 in Figures 1 & 2.	1, 4 & 8-11
A, E	JP 10-113364 A (Tama Juki Kensetsu KK) whole document & Figures.	1-5 & 8-11 at least

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.