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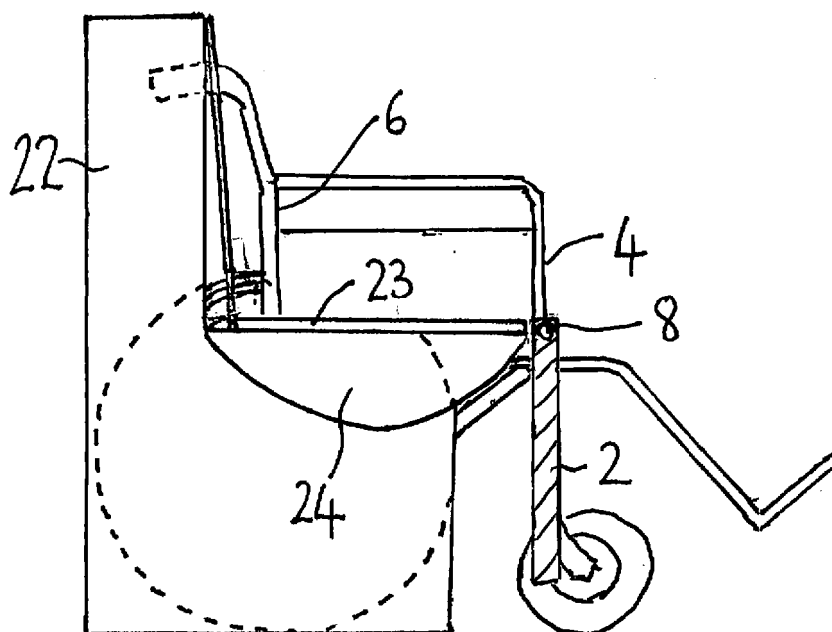
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(54) **WHEELCHAIR**

(57) A wheelchair has a seat member (2), held in a substantially horizontal position in a normal configuration. The seat member (2) is hinged to the frame of the wheelchair and pivotable downwardly into a toileting configuration. The wheelchair is movable rearwardly to locate it around a toilet having a toilet seat (23), such that an occupant of the wheelchair can sit on the toilet seat.

A garment for use with the wheelchair includes a flap (30) in a seat of the garment, defined by two slits (26), one on each side, as well as a rear portion of a waist hem (28) of the garment. A fastener (34) connects the flap (30) to the seat member (2) of the wheelchair, so that as the seat member falls, it pulls down the flap.



Description

Background to the Invention

[0001] This invention relates to a wheelchair and a garment for a wheelchair user.

[0002] It is an aim of the invention to provide a wheelchair that can allow use of a toilet without the need to leave the wheelchair.

[0003] US 4229039 A, US 2005/02296 A1, US 4514867 A, US 2086550 A, US 7793364 B1 and KR 20130032801 A all describe wheelchairs in which a central part of the wheelchair seat pivots downwardly to facilitate toileting.

Summary of the Invention

[0004] With the aim of providing a more familiar experience, the invention provides a wheelchair according to claim 1. The wheelchair has a frame having a rearward facing aperture, and a seat member held in a substantially horizontal position in a normal configuration. The seat member is hinged to the frame and pivotable downwardly into a toileting configuration, in which the wheelchair is movable rearwardly to locate the aperture around a toilet for use of the actual toilet seat by an occupant.

[0005] A hinge joining the seat member to the frame can be located at a front edge of the seat. In this way, the front edge will remain in place in the toileting configuration, so that the user's thighs can continue to rest on it. In one embodiment, a substantially horizontal frame part extends through at least one circular aperture in the seat member.

[0006] At least one latch can be provided for retaining the seat member in the substantially horizontal position and releasing it therefrom. The latch(es) can secure the seat member to a substantially horizontal rear frame part and/ or to one or both of two opposed substantially vertical rear frame parts. In certain embodiments, the or each latch is urged into a seat-holding position by a spring; a button or handle may be provided for disengaging the or each latch.

[0007] The seat member may be provided with a seat element fastener for attaching a garment flap described below.

[0008] Two further aspects of the invention provide a garment for use with the wheelchair, and a combination of the garment and the wheelchair. The garment, which may comprise trousers or a skirt, comprises a flap in a seat of the garment, defined by two slits, one on each side, as well as a rear portion of a waist hem of the garment, a fastener being provided for connecting the flap to the seat member of the wheelchair. As the seat member falls, it pulls down the flap, so that the user does not have to remove or lower the garment.

[0009] The fastener can comprise a hook, a button, a rigid or flexible eye, a strap or a hook-and-loop material such as Velcro®. In one embodiment, a strap, cord or

web, which may be elastic, extends from a location on the flap at or near the waist hem; alternatively the fastener may simply be located on a part of the flap that contacts the seat member.

[0010] Zips or other slit fasteners can be provided for fastening the slits in normal use of the garment. If so, the user releases the slit fasteners prior to lowering the seat member.

Brief Description of the Drawings

[0011] Embodiments of the invention will now be described in more detail, by way of example only, with reference to the accompanying drawings, in which:

Figure 1 is a schematic sectional view of a wheelchair according to the invention, in the normal configuration;

Figure 2 shows the wheelchair of Figure 1 in the toileting configuration, located around a toilet;

Figure 3 is a fragmentary, part-sectional rear view showing the seat latches of the wheelchair of Figure 1; and

Figure 4 is a side view of a garment according to the invention.

Detailed Description of Particular Embodiments

[0012] Figure 1 shows a wheelchair in a normal configuration. The wheelchair is generally conventional in form except for a seat member 2. The wheelchair comprises two front vertical frame elements 4 and two rear vertical frame elements 6, the seat member 2 extending between all four vertical frame members. Another potential distinction between the wheelchair of Figure 1 and a conventional wheelchair is that the wheelchair of Figure 1 has no transverse frame elements extending between the two rear vertical frame elements 6 below the seat member 2, even if the wheelchair can be folded.

[0013] The seat member 2 conveniently comprises a rigid planar member and optionally an attached cushion. The seat member is journaled on a transverse shaft 8 extending between the two front vertical frame elements 4 and through a cylindrical passage at the front of the seat member 2.

[0014] Figure 3 shows an example of how the seat member 2 can be carried by the rear vertical frame elements 6. Latching handles 10 extend through passages that extend through the rear vertical frame elements 6 as well as supports 12. The inner ends of the latching handles 10 terminate in latches 14, which have lower surfaces that slope upwardly in the inner direction. Each latching handle 10 carries a compression spring 16 within the respective passage. The inner end of the spring 16 abuts a projection on the latching handle 10, whilst the

outer end is captive within the passage. In this example, the outer ends of the latching handles 10 are formed as downwardly-extending handle parts 18.

[0015] A fastener, in this example an eye 20, is located at the rear of the seat member 2.

[0016] In the normal configuration, the wheelchair can be used in the same manner as a conventional wheelchair.

[0017] When the user desires to use a toilet, he or she pulls the handle parts 18 outwardly, thus withdrawing the latches 14 so that the seat member 2 swings downwards, pivoting at the shaft 8, to the position shown in Figure 2. The user's thighs continue to rest on the front of the seat member 2. The wheelchair can then be reversed around a toilet 22, with the vertical frame members 4, 6 on either side of the toilet, positioning the user on the toilet seat 23 over the bowl 24 of the toilet.

[0018] Figure 4 shows an example of a pair of trousers according to the invention. Two zips 26 are provided, one at each side, running from the waistband 28 of the trousers to a point below the front pocket entrances. A flap 30 is defined by the zips 26 and the rear half of the waistband 28.

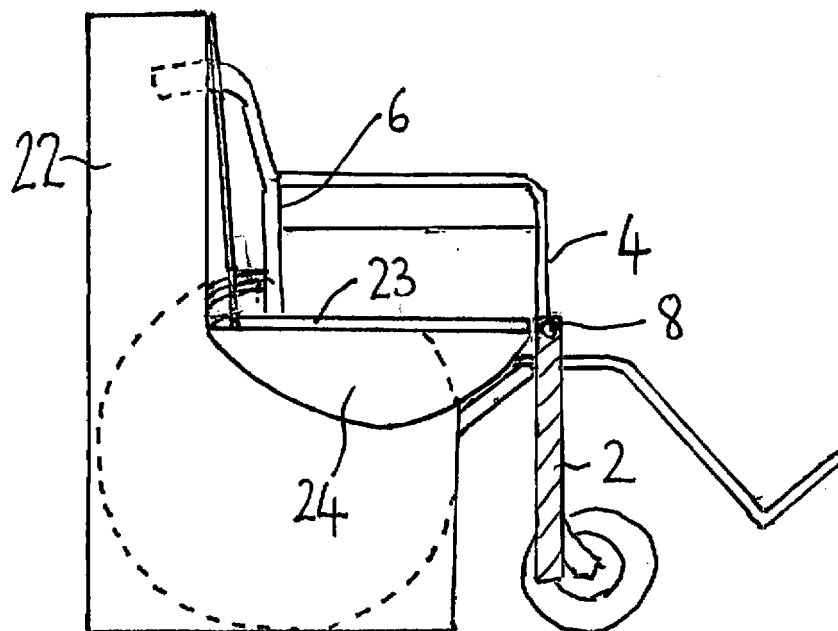
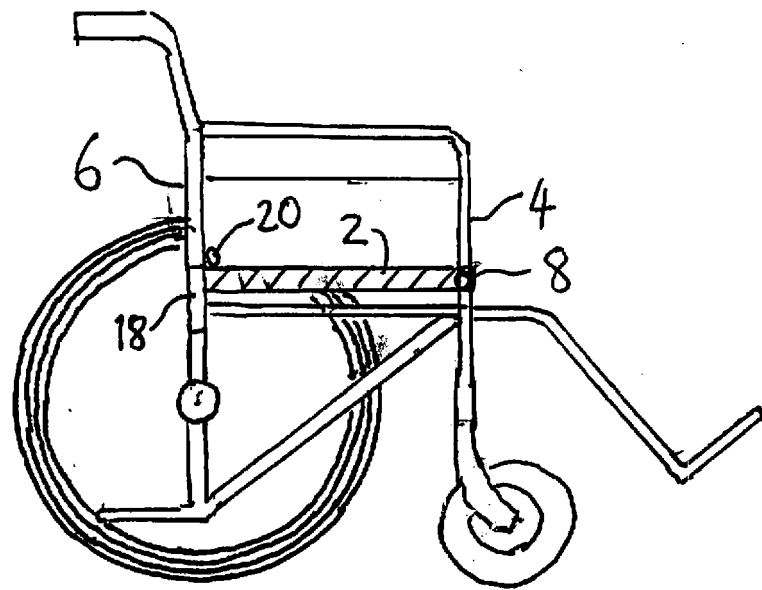
[0019] A cord 32 extends from the rear midpoint of the waistband 28 and terminates in a hook 34.

[0020] A wheelchair user dons the trousers, and inserts the hook 34 into the eye 20 as he or she sits in the wheelchair. Prior to toileting, the user unfastens the zips 26. When the seat member 2 is released in the manner described above, as it swings down, the eye 20 and the cord 32 pull the flap 30 down. In this way, the user can use the toilet without the otherwise awkward operation of lowering his or her trousers.

[0021] A skirt according to the invention is provided with a flap similar to the flap 26 of the trousers described above.

Claims

1. A wheelchair having a frame having a rearward facing aperture, and a seat member held in a substantially horizontal position in a normal configuration, the seat member being hinged to the frame and pivotable downwardly into a toileting configuration, in which the wheelchair is movable rearwardly to locate the aperture around a toilet having a toilet seat, such that an occupant of the wheelchair can sit on the toilet seat.
2. A wheelchair according to claim 1, wherein a hinge joining the seat member to the frame is located at a front edge of the seat member.
3. A wheelchair according to claim 1 or 2, wherein a substantially horizontal frame part extends through at least one circular aperture in the seat member.
4. A wheelchair according to claim 1, 2 or 3, wherein at least one latch is provided for retaining the seat member in the substantially horizontal position and releasing the seat member therefrom.
5. A wheelchair according to claim 4, wherein the latch(es) are arranged to secure the seat member to a substantially horizontal rear frame part and/or to one or both of two opposed substantially vertical rear frame parts.
6. A wheelchair according to claim 4 or 5, wherein the or each latch is urged into a seat-holding position by a spring.
7. A wheelchair according to any preceding claim, wherein the seat member is provided with a seat element fastener for attaching a garment flap.
8. A garment for use with the wheelchair according to any preceding claim, comprising trousers or a skirt, and including a flap in a seat of the garment, defined by two slits, one on each side, as well as a rear portion of a waist hem of the garment, a fastener being provided for connecting the flap to the seat member of the wheelchair, so that as the seat member falls, it pulls down the flap.
9. A garment according to claim 8, wherein the fastener comprises a hook, a button, a rigid or flexible eye, a strap or a hook-and-loop material.
10. A garment according to claim 8 or 9, wherein a strap, cord or web, for fastening the flap to the seat member of the wheelchair, extends from a location on the flap at or near the waist hem.
11. A garment according to claim 10, wherein the strap, cord or web is elastic.
12. A garment according to claim 8 or 9, wherein the fastener is located on a part of the flap that contacts the seat member in use.
13. A garment according to any one of claims 8 to 12, wherein slit fasteners are provided for fastening the slits in normal use of the garment.
14. A garment according to claim 13, wherein the slit fasteners comprise zips.
15. A combination of a wheelchair according to any one of claims 1 to 7 and a garment according to any one of claims 8 to 14.



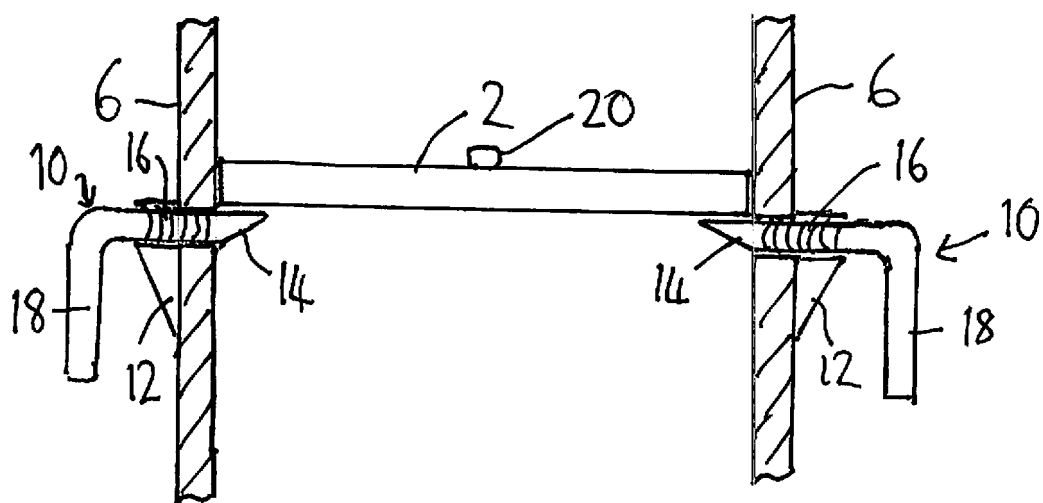


Fig. 3

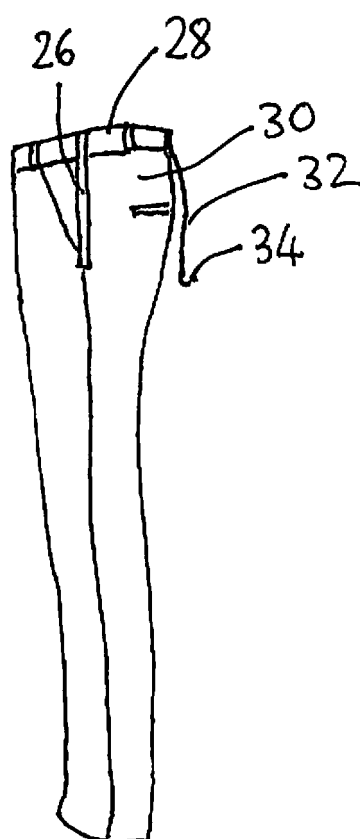


Fig. 4



EUROPEAN SEARCH REPORT

Application Number
EP 17 15 1609

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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	BE 744 450 A1 (MARCHAL ANDRE) 15 June 1970 (1970-06-15)	1-3	INV. A61G5/10 A41D13/12
Y	* page 1, paragraph 2 - page 2, paragraph 3 *	4-6	
A	* figures 1-3 *	7-15	
Y,D	----- US 4 229 039 A (DAY FREDERICK L) 21 October 1980 (1980-10-21) * column 2, line 44 - line 58 * * figures 1-3 *	4-6	
X	----- WO 2012/034561 A2 (TEISEN-SIMONY CLAUDE [DK]; XIGN LTD D [GB]) 22 March 2012 (2012-03-22) * page 8, line 27 - line 35 * * figure 3 *	8-14 15	
-----			TECHNICAL FIELDS SEARCHED (IPC)
			A61G A41D
The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of the search 29 June 2017	Examiner Ong, Hong Djien
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)

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

EP 17 15 1609

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
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29-06-2017

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
BE 744450	A1	15-06-1970	NONE
US 4229039	A	21-10-1980	NONE
WO 2012034561	A2	22-03-2012	NONE

REFERENCES CITED IN THE DESCRIPTION

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