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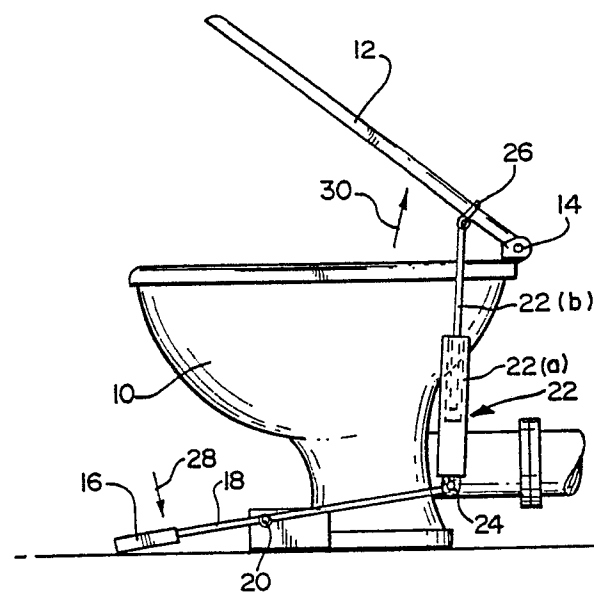
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54 **Lifting device.**

57 A device for raising the seat (12) of a toilet (10) about its hinged mounting (14) includes actuating means associated with a system of levers which joins the actuating means to a pivotal linkage point (26) located on the seat of the toilet. The actuating means comprises a substantially horizontally disposed pivoted lever (18) provided towards one of its ends with a foot pedal (16) and towards the other of its ends with a pivotal linkage (24) for connecting with a substantially vertically disposed lever (22) which, at its upper end, is pivotally linked to a clamp fast with the seat of a toilet assembly. The vertically disposed lever comprises an outer sheath (22(a)) for housing an inner rod (22(b)) slideable within the sheath. The pivotal linkage point located on the toilet seat comprises a clamp and ball joint arrangement for gripping the toilet seat and mating with the upper end of the substantially vertically disposed lever.



**FIG 2**

**EP 0 357 890 A1**

# LIFTING DEVICE

This invention relates to method and means for lifting the seat of a toilet installation; particularly where such toilet is commonly used by large numbers of the public and, even more particularly, in men's public toilets.

It is well known to users of toilet installations of the kind in question that some persons find it inconvenient or tedious to stoop sufficiently to grasp and raise the seat of a toilet before urinating therein. This almost invariably results in soiling of the seat resulting, to say the least, in inconvenience and irritation to the next user.

It is an object of the invention to minimise such known disadvantages and to provide a convenient system for lifting a toilet seat.

According to the invention, a device adapted to raise the seat of a toilet about its hinged mounting includes actuating means associated with a system of levers or equivalent mechanical linkage which joins the actuating means to a pivotal linkage point on the seat. In a presently preferred form of the invention the actuating means is a foot-operable pedal.

In order to illustrate the nature of the invention an example will be described with reference to the accompanying drawing in which:-

Fig. 1 and Fig. 2 illustrate a side elevation of a conventional flush-type toilet, modified by provision of a detached seat lifting device of the invention. The device could well be built into the toilet during manufacture of a new toilet having the invention in mind.

Referring to the drawings, Numeral 10 illustrates the conventional toilet bowl flush-type toilet, whilst 12 illustrates the usual seat hingedly mounted at 14.

A foot pedal, 16, connects through lever 18 pivoted at 20 and lever 22 pivoted at 24, with pivotal linkage point 26 on seat 12. Lever 22 comprises an outer sheath 22(a) and an inner slidable rod 22(b), which arrangement allows seat 12 to go "over centres" about hinge 14 and to come to rest against a cistern or wall (not shown), whereafter pressure may be released on the pedal 16 allowing it to return to the position shown in Fig. 1 without the seat 12 being affected. Closure of the seat would then be manual in the usual manner.

In a first alternative version of the invention, lever 22 may be solid, thus requiring pressure to be maintained on the pedal 16 during use. In this version, upon releasing pressure on pedal 16, seat 12 will be constrained to return from the position shown in Fig. 2 to that shown in Fig. 1 under the influence of gravity.

In a further alternative version, lever 22 may be

perforated and supplied with a pin (not shown) capable of insertion into one of the perforations (not shown) thus regulating the depth to which component 22(b) will penetrate component 22(a), so providing adjustment of the travel distance of seat 12.

In yet a further alternative version, pedal 16 may be replaced by a horizontal bar which, through a pair of levers equivalent to lever 18, may actuate a pair of levers 22 arranged to each side of the toilet bowl 10. This arrangement would be considerably more robust and better balanced and might be considered for use in public toilets where extensive use of the toilet facility is commonplace. Other alternative versions of the invention will spring readily to the mind of those skilled in the art, but all will embrace the general principle of the invention as herein disclosed.

To illustrate the use of the presently preferred version of the invention, pedal 16 is depressed by foot operation in the direction of arrow 28 (Fig. 2) causing the system of levers 18 and 22 to apply a lifting force on pivotal linkage point 26, thereby raising seat 12 in the direction of arrow 30 (Fig. 2). By suitable arrangement of members 22(a) and 22(b), seat 12 may go over centres and pressure may then be released from pedal 16 without the seat being constrained to return to the position shown in Fig. 1.

In the first alternative version of the invention above described, release of pressure on pedal 16 will initiate the reverse process to that just described and seat 12 will return from approximately the position shown in Fig. 2 to the normal position as shown in Fig. 1. A disadvantage of this arrangement is that sudden release of pressure on pedal 16 may well cause seat 12 to descend upon bowl 10 with great force, thus causing damage to the bowl 10.

The method of operation and structure of the device of the invention as illustrated and described above are non-limiting disclosures as will be apparent to those skilled in the art and several alternative structures could be employed to achieve the object of the invention. Each would, however, be a more mechanical variant of the invention as disclosed and described. A further example which springs readily to mind could be a hand-operable lever or bar which could be located on a wall adjacent to the toilet and coupled by means of a Bowden cable which would replace levers 18 and 22 but yet yield the same desired effect. Other variants will spring to the mind of those involved in this field of endeavour.

## Claims

1. A device adapted to raise the seat of a toilet about its hinged mounting includes actuating means associated with a system of levers or equivalent mechanical linkage which joins the actuating means to a pivotal linkage point located on the seat of the toilet. 5

2. A device as claimed in Claim 1 wherein the actuating means is a foot operable pedal. 10

3. A device as claimed in Claim 1 or Claim 2 wherein the actuating means comprises a substantially horizontally disposed pivoted lever provided towards one of its ends with a foot pedal and towards the other of its ends with a pivotal linkage adapted to connect with a substantially vertically disposed lever which, at its upper end, is pivotally linked to a clamp fast with the seat of a toilet assembly. 15

4. A device as claimed in any one of Claims 1 to 3 wherein the vertically disposed lever comprises an outer sheath adapted to house an inner rod slideable within the sheath. 20

5. A device as claimed in any one of Claims 1 to 4 wherein the pivotal linkage point located on the toilet seat comprises a clamp and ball joint arrangement adapted to grip the toilet seat and to mate with the upper end of the substantially vertically disposed lever. 25

6. A device of the kind herein described when overconstructed and arranged substantially as herein described with reference to the accompanying drawings. 30

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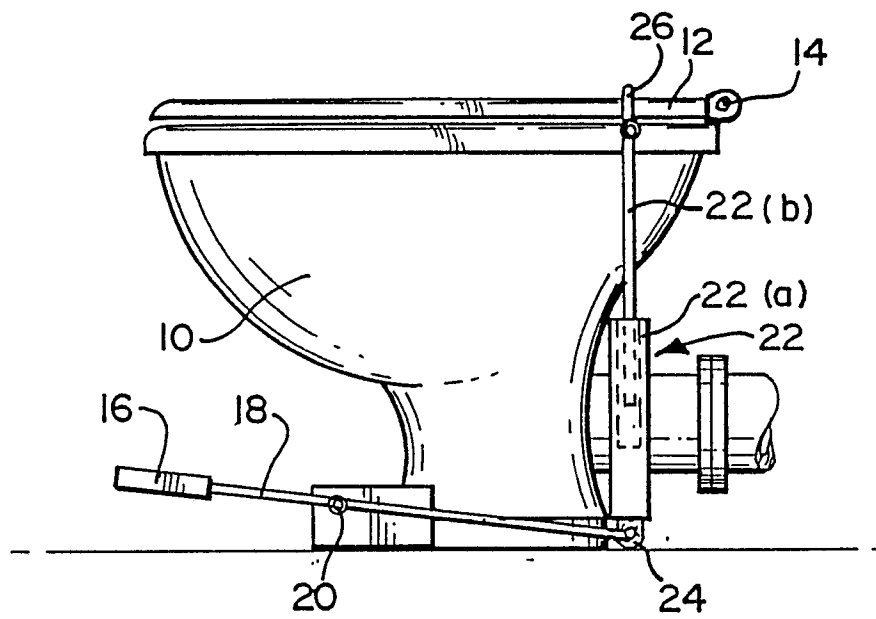


FIG 1

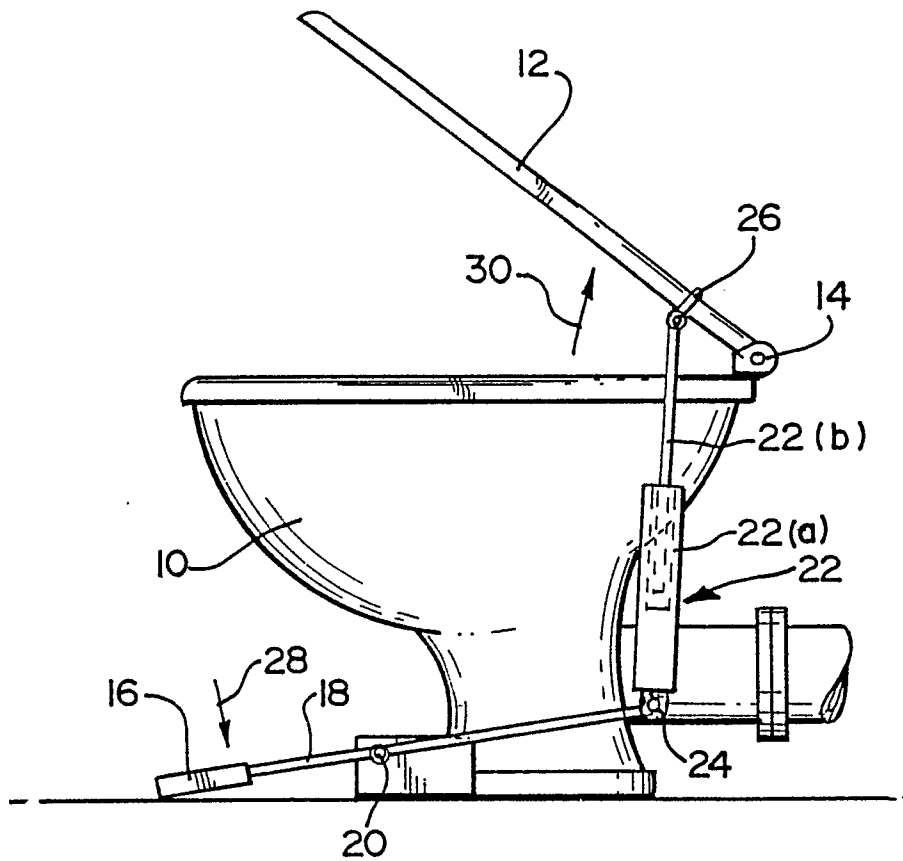


FIG 2



DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.5)
X	FR-A-2 225 133 (CHILEMME) * Whole document * ---	1-4,6	A 47 K 13/10
X	DE-C- 826 629 (WÖLL) * Whole document * ---	1-3,6	
X	WO-A-8 804 534 (THE PERFECT GENTLEMAN PTY. LTD) * Page 8, line 20 - page 12, line 7; figures 1-5 * ---	1-3,5,6	
A	---	4	
X	FR-A- 632 445 (FRÖLICH) * Whole document * ---	1	
X	US-A-4 592 097 (ZIMMERMAN) * Claim 1; figures 1,2 * -----	1,2	
The present search report has been drawn up for all claims			TECHNICAL FIELDS SEARCHED (Int. Cl.5)
			A 47 K
Place of search THE HAGUE		Date of completion of the search 21-11-1989	Examiner DE COENE P.J.S.
<b>CATEGORY OF CITED DOCUMENTS</b> 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			