FOOT-OPERATED TOILET SEAT LIFT

Inventor: Homy Chamanara, Chicago, IL (US)

Appl. No.: 13/446,925
Filed: Apr. 13, 2012

Related U.S. Application Data
Continuation-in-part of application No. 13/095,649, filed on Apr. 27, 2011.

Publication Classification
Int. Cl. A47K 13/10 (2006.01)
U.S. Cl. 4246.3

ABSTRACT
A foot-operated toilet seat lifting device comprises a pedal assembly, lifting mechanism, and means for transmitting the force from the user's foot to the lifting mechanism. The device includes a base portion, foot pedal, force-transmitting cable, seat lifting arm, contact roller, and seat gripping bracket.
FOOT-OPERATED TOILET SEAT LIFT

BACKGROUND

[0001] This application is a continuation in part of and claims priority to patent application Ser. No. 13/095,649, filed on Apr. 27, 2011, which application is hereby incorporated by reference in its entirety.

FIELD OF THE INVENTION

[0002] This invention relates to a toilet seat lifting device, and in particular to a toilet seat lifting device that is operated by the user's foot.

DESCRIPTION OF THE PRIOR ART

[0003] The standard toilet includes a toilet bowl and a liftable seat and lid that are pivotally attached to the wall. Users of a toilet must lift the lid and/or seat to an upright position prior to use. Lifting the toilet seat manually is often not desirable due to sanitary concerns, which is especially true in public facilities. Lifting the toilet seat also places a physical demand on the elderly, and people with temporary or permanent physically challenges, by requiring them to bend down to reach the toilet seat. Existing devices for lifting toilet seats and lids are complex and require extensive installation procedures and/or permanent additions or modifications to the toilet. Many of these devices are also costly to manufacture and maintain. Moreover, many of these devices must be operated with the hands or are otherwise not easily operated.

[0004] For example, U.S. Pat. No. 5,404,595 to Carmel and U.S. Pat. No. 4,975,998 to Won require a non-standard, customized toilet seat in order to be used. Some devices are permanent parts of the toilet seat such as U.S. Pat. No. 1,681,277 to Booth. Moreover, other devices such as U.S. Pat. No. 2,305,147 to Deal require some action by the user in order to lower the toilet seat to its original, lowered position. Devices that are overly complex in their construction, installation and/or maintenance include U.S. Pat. No. 1,180,140 to Godoy, U.S. Pat. No. 1,276,472 to Zeen, U.S. Pat. No. 621,790 to Burger, U.S. Pat. No. 621,790 to Becker, U.S. Pat. No. 1,863,295 to Bukowitz, U.S. Pat. No. 1,505,472 to Kim, U.S. Patent No. 3,345,650 to Waters, U.S. Pat. No. 2,100,906 to Lefkowitz, U.S. Pat. No. 2,232,895 to White, U.S. Pat. No. 3,504,385 to Fields, U.S. Pat. No. 4,584,724 to Wilson, and U.S. Pat. No. 4,649,576 to Lillie. Devices such as those disclosed in U.S. Pat. No. 6,158,089 to Zhang require the toilet seat and lid to be removed as part of the installation. Some of these devices, such as U.S. Pat. No. 4,592,097 occupy space around the toilet and are thus physically intrusive.

[0005] Accordingly, use of prior art devices is impractical in many situations and their usage has not become widespread. There remains a need in the art for a simple toilet seat lift device that is easy to construct, install, and operate.

BRIEF SUMMARY OF THE INVENTION

[0006] The toilet seat lifter of the present invention allows a user to manipulate the toilet seat in a hands-free manner. The toilet seat lifter is configured for use with a standard toilet.

[0007] A primary object of the present invention is to provide a device for lifting and lowering the toilet seat and/or lid in a hands-free manner that does not require the user to bend over.

[0008] A second object of the invention is to provide means for lifting and lowering a toilet seat or lid via a foot-operated mechanism.

[0009] A further object of the invention is to provide a toilet seat lift device that can be used with a variety of toilet types.

[0010] Another object of the invention is to provide such a toilet seat-lift device that can be reversibly installed by a user with minimal effort and without making permanent or substantial modifications to the toilet.

BRIEF DESCRIPTION OF THE DRAWINGS

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

[0012] FIG. 1 is a perspective view of a toilet with an exemplary embodiment of the toilet seat lifting device of the present invention provided therein;

[0013] FIG. 2 is an enlarged view of an exemplary embodiment of the toilet seat lifting device of the present invention;

[0014] FIG. 3 is an embodiment of the toilet seat lifting device with a pivot bracket in between the toilet and the toilet seat;

[0015] FIG. 4 is a view of a toilet seat with a fully assembled lifter mechanism as illustrated in FIG. 3;

[0016] FIG. 5 is a side view of the toilet seat of FIG. 4 with a fully assembled lifter mechanism;

[0017] FIG. 6 is an illustration of a toilet seat that has been lifted by pressing the pedal.

DETAILED DESCRIPTION

[0018] Referring to the drawings, an illustrative embodiment of the toilet seat lifting device of the present invention, toilet seat lifting device 100, is shown in FIG. 1. Toilet seat lifting device 100 comprises a pedal assembly 110, flexible cable 140, lifting arm 150, contact roller 160, gripping bracket 170, and gripping arms 180 and 185 (collectively “gripping arms”). The pedal assembly 110 further comprises a base portion 120 and a foot pedal 130. Lifting arm 150 rotates about the gripping arm 180 and has a proximal end that is connected to cable 140 and a distal end that is connected with contact roller 160. The gripping bracket 170 can be contoured for the shape of the back of the toilet seat so it does not interfere with the use of the toilet seat.

[0019] The pedal assembly 110 rests on the floor next to the base of the toilet and is configured to receive the user’s foot and activate the lifting mechanism. Pedal assembly 110 further comprises base portion 120 and foot pedal 130, which are connected at their proximal ends by a hinge joint. The hinge joint can be based on a spring or coil mechanism, or a pneumatic mechanism, whereby the foot pedal 130 returns to its original upright position once pressure (e.g. as applied by a user’s foot) is removed via a restoring force provided by the spring, pneumatic or other mechanism. Base portion 120 is in contact with the floor and is connected with foot pedal 130 via a hinge joint (or other flexible connecting means as known in the art). For added stability and convenience, foot pedal 130 can have dimensions somewhat smaller than the average human foot. Preferably, a tactile rubber pad or comparable surface is provided on the underside of base portion 120 in order to grip the floor and resist movement. Also, the free end (distal end) of base portion 120 includes a perpendicular segment that contacts the floor and provides stability by resisting lateral rotation and movement. When a user desires
to lift the toilet seat to the upright position, the foot is placed on the foot pedal 130, pulling down cable 140 and the proximal end of lifting arm 150. Because lifting arm 150 rotatably rests on gripping arm 180 at pivot point 155, lowering of the proximal end of lifting arm 150 causes the distal end to be raised. Thus, lifting arm 150 acts as a lever about pivot point 155. When the proximal end of the lifting arm 150 is raised, the contact roller lifts the toilet seat as its rolls across the underside of the seat.

[0020] The contact roller 160 comprises a rotating cylinder configured to reduce friction and skidding with the toilet seat during lifting to provide for a smoother lifting mechanism. During the lifting process, gripping bracket 170 provides stability and translates the force of the lifting across the entire (both sides) of the toilet seat, as opposed to lifting only one side of the toilet seat. This ensures that forces are distributed more uniformly across the toilet seat, which will prevent damage to the seat’s attachment joints that would develop through repeated use. Gripping bracket 170 comprises a primary segment and two “u”-shaped gripping arms. The gripping arms are each configured to receive and secure the side of the toilet seat. FIG. 2 is an enlarged view of an exemplary embodiment of the toilet seat lifting device of the present invention, showing the aforementioned component parts.

[0021] With respect to exemplary materials for use in the device, the lifting arm 150 and gripping bracket 170 are preferably made of a stiff, light material such as a plastic, as known in the art. Cable 140 is preferably constructed from a light yet durable material, such as metal chain, polymer (e.g., rubber), or rope. Because a light metal chain may tend to be more prone to breaking, tangling, and/or causing noise, and is more unsightly, a rubber or composite textile (e.g. nylon) material is preferred. The pedal assembly 110 should have a base portion 120 that is sufficiently heavy to provide stability and prevent movement of the device about the floor. Alternatively, the base portion 120 could be secured to the floor using simple, non-destructive methods such as temporary tape or glue.

[0022] In another embodiment, the lifting assembly (218, 220) has a rod 216 that allows for pivoting. The rod 216 is placed in a pivot bracket (212, 214).

[0023] The pivot bracket 212 can be secured in different ways. A pivot bracket can be used with a long base 212 that goes in between the toilet seat (200) and the toilet (210). As such, the lifting assembly can be installed by using a conventional toilet seat without modification to the toilet. The rod 216 is inserted at one end of this long base.

[0024] FIG. 3 illustrates this lifting mechanism. Pedal 130 is attached to the chain 140. The chain 140 pulls the lifting arm which is made of 218 and 220. The lifting arm pivots through the rod 216. The pivoting allows the contact roller 226 to lift the toilet seat. The lifting arm is kept in place with a pivot bracket 212 that in effect allow the rod to form a lever. The opening of the pivot bracket 214 allows for insertion of the pivot rod 216. The pivot rod 216 rotates in the pivot bracket opening 214. The pivot bracket 212 is placed in between the toilet seat 200 and the toilet seat 210.

[0025] FIGS. 4 and 5 illustrate a toilet 210 with the assembled toilet seat lifter described in FIG. 3. FIG. 6 illustrates the lifting of the toilet seat by pressing the pedal 130. The toilet seat lifter can be designed so that the toilet seat is lifted to less than 90 degrees. By lifting the toilet seat to less than 90 degrees, after releasing pressure on the pedal, the toilet seat comes back to its original position.

[0026] While there have been described herein what are considered to be preferred and exemplary embodiments of the present invention, other modifications of the invention shall be apparent to those skilled in the art from the teachings herein. It is therefore desired to be secured, in the appended claims all such modifications as full within the spirit and scope of the invention.

What is claimed is:
1. A toilet seat lifting device comprising:
   (a) a pedal assembly having a foot-receiving pedal pivotally connected with a base that rests on the floor, said connection occurring between a proximal end of the pedal and a proximal end of the base;
   (b) a lifting assembly having a lifting arm having a proximal and a distal end, a contact roller connected with the proximal end of the lifting arm at a perpendicular angle, and a gripping bracket connected to the lifting arm to form a lever point, said gripping bracket having two gripping arms configured to connect with both sides of a toilet seat;
   (c) a cable that connects a distal end of the foot pedal to a distal end of the lifting arm, such that pressing downward on the foot pedal pulls the distal end of the lifting arm downward and the proximal end of the lifting arm upward;
   wherein the contact roller rests immediately below, and in contact with, the seat and is parallel to the gripping bracket; and
   wherein the gripping bracket comprises a primary segment that runs along the base of the toilet seat and parallel to the toilet bowl and two gripping arms, each configured to receive and secure one side of the seat.
2. The device of claim 1 wherein the gripping bracket and lifting arm are made of a stiff, lightweight plastic.
3. The device of claim 1 wherein the flexible cable is made of a polymeric material.
4. The device of claim 1 wherein the gripping arms are “u”-shaped extensions configured to receive and secure the sides of a toilet seat.
5. The device of claim 1 wherein the device can be reversibly installed without permanent changes to the toilet.
6. The device of claim 1 wherein the device can be reversibly installed and un-installed without the need for tools.
7. The device of claim 1 wherein the base of the pedal assembly comprises one or more perpendicular extensions that provide stability by resisting lateral movement of the pedal assembly.
8. The device of claim 1 wherein the base of the pedal assembly has a tactile bottom surface to reduce movement of the pedal assembly across the floor.
9. The device of claim 1 wherein the foot pedal of the pedal assembly is configured to receive a human foot.
10. The device of claim 1, wherein the gripping bracket is contoured to the shape of the toilet seat.
11. A toilet seat lifting device comprising:
   (a) a pedal assembly having a foot-receiving pedal pivotally connected with a base that rests on the floor, said connection occurring between a proximal end of the pedal and a proximal end of the base;
   (b) a cable that connects a distal end of the foot pedal to a distal end of a lifting arm, such that pressing downward on the foot pedal pulls the distal end of the lifting arm downward and the proximal end of the lifting arm upward;
(c) the lifting assembly having a lifting arm having a proximal and a distal end, a contact roller connected with the proximal end of the lifting arm roller that rests immediately below the toilet seat, and a rod connected to the distal end of the lifting arm for forming a lever point, said rod configured to be positioned in a pivot bracket; (d) the pivot bracket for allowing the rod to form a lever; wherein pressing on the pedal causes the lifting assembly to pivot so that the lifting arm roller lifts the toilet seat, wherein the toilet seat is lifted to a maximum position that allows the toilet seat to come down by force of gravity when the foot is removed from the pedal.

11. The toilet seat lifting device of claim 10, wherein the pivot bracket is secured in between the toilet and the toilet seat.