June 23, 1970 J. M. CLIFTON ET AL 3,516,095

DOUBLE ACTION SANITARY COMMODE SEAT LIFTING AND LOWERING DEVICE

Filed Aug. 22, 1967

Fig. 1

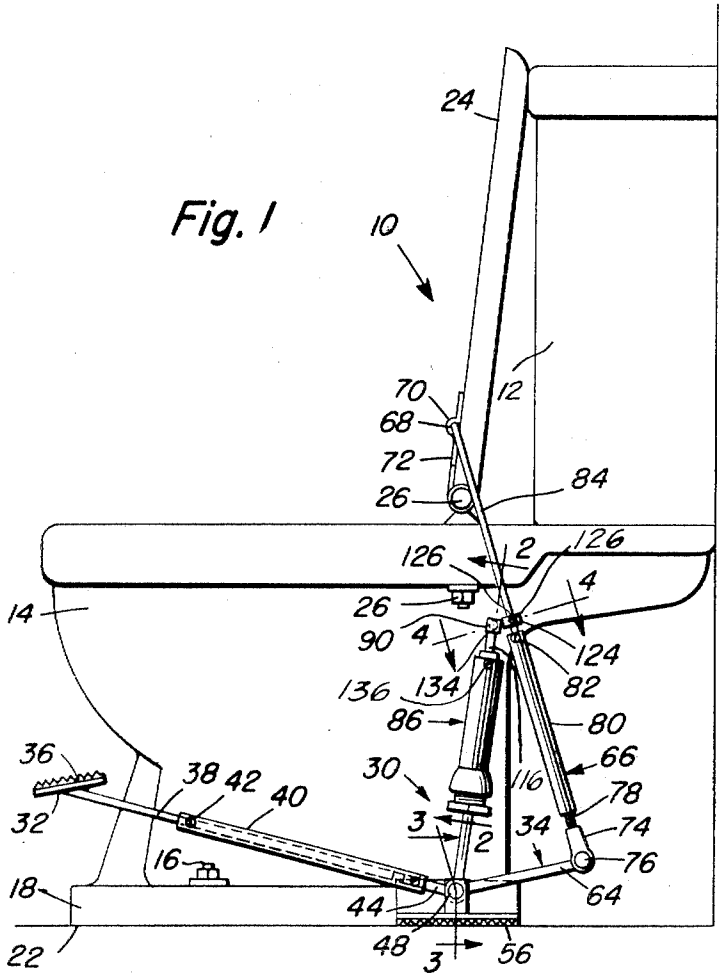


Fig. 2

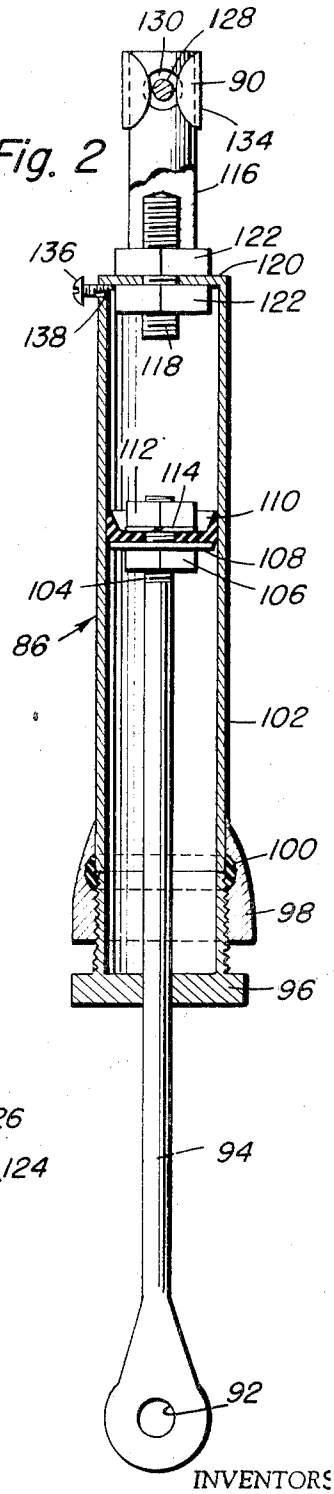


Fig. 3

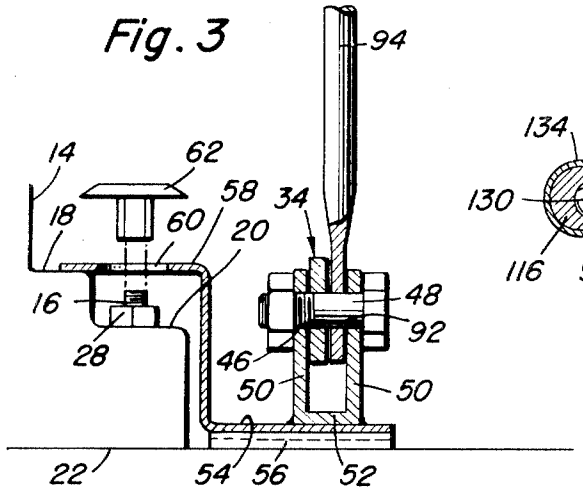
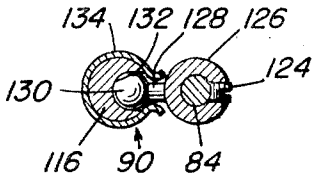


Fig. 4



INVENTORS

John M. Clifton

Rebecca Clifton

BY Gustave Miller

ATTORNEY

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DOUBLE ACTION SANITARY COMMODE SEAT LIFTING AND LOWERING DEVICE

John M. Clifton and Rebecca A. Clifton, both of P.O. Box 234, Lyman, Miss. 39501

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U.S. Cl. 4—251 10 Claims

ABSTRACT OF THE DISCLOSURE

This invention is a double action lifting and lowering device for moving a commode or toilet seat between raised and lowered position in either direction. It includes a single foot pedal which, when depressed, moves the seat from either position. The foot pedal is on one end of a crank arm lever, pivoted at its angle to a base that is supported on the commode room floor, and made secure by being secured to a commode bowl securing bolt, and a link at the other end of the elever is pivotally attached to one side of the toilet seat. In addition, an action cushioning pneumatic cylinder, piston and piston connecting rod combination is pivoted on the crank arm pivot at one end and on the seat lifting link at the other end, permitting the seat to be lifted, in either direction, to the dead-center position, and then cushions the fall of the seat from such dead-center position to the desired raised or lowered position. Both the link and the pedal arm of the crank arm lever are readily adjustable in length, being telescopic, for ready adjustment to fit different sized commodes, and can be set up or detached from the seat in very few minutes.

OBJECTS OF INVENTION

It is an object of this invention to provide a sanitary toilet seat operator having only a single pedal, which acts to either lift or lower the toilet seat, by foot action, without needing one's hands at all, without manually touching the toilet seat.

A further object of this invention is to provide a toilet seat lifting and lowering device, or operator, that is easily operated by an aged or infirm individual, and which includes an action cushioning device that operates to cushion the action as the seat approaches either the bowl rim in lowered position, or the toilet water box in the raised position.

A further object of this invention is to provide a double action sanitary commode seat lifting and lowering device which is readily adjustable in size to fit substantially any existing commode and which may be quickly adjusted to and fitted on or removed from the commode.

A further object of this invention is to provide a double action quiet acting toilet or commode seat operator actuated in either direction by foot pressure applied on a single foot pedal.

SUMMARY

In brief, this invention is a double action, toilet seat operator. It consists of a crank arm lever pivoted at its angle by a pivot supported on the toilet room floor and secured to one of the toilet bowl securing bolts. A long arm of the lever is telescopic, for adjustment in length, and has a foot pedal, with a cushion pad on it, at its free end. The other end of the lever is pivotally secured to a connecting link which in turn is pivotally secured to an ear on a bracket easily secured at either side of a toilet or commode seat. The link is telescopically adjustable in length. Pivotally secured on the same floor supported pivot and pivotally secured adjustably along the connecting link is a pneumatic cylinder, piston and piston connecting rod combination having a bleed valve for adjusting its operation. The piston is a cupped resilient piston, allowing the air to readily pass thereby when the foot is pressing the operator to lift the seat either from the bowl rim or from leaning position against the toilet water box to dead-center position, and then resisting the air passing in the opposite direction, thus cushioning the action as the seat moves under gravity from dead-center position to the bowl rim lowered position or to the water box leaned against raised position.

BRIEF DESCRIPTION OF DRAWING

With the above and related objects in view, this invention consists in the details of construction and combination of parts, as will be more fully understood from the following description, when read in conjunction with the accompanying drawing, in which:

FIG. 1 is a side elevation of the seat lifting and lowering device of this invention.

FIGS. 2, 3, and 4 are sectional views on lines 2—2, 3—3, and 4—4 of FIG. 1.

DETAILED DESCRIPTION

There is shown at **10** a toilet or commode of conventional construction having the water box **12**, a commode bowl **14** secured by bolts and nuts **16** through its base **18** which may be offset as at **20** in FIG. 3, to the commode room floor **22**, all of conventional construction, the commode seat **24** being pivotally mounted on pivot bolts **26** in the customary manner for movement in either over-dead-center direction between the raised position shown in FIG. 1 leaning against the commode water box **12** and a lowered, horizontal position resting on the rim of the commode bowl **14**.

There is shown at **30** the commode seat positioning device of this invention, sanitary because the hand need not touch the commode seat **24**, and convenient to use, particularly for an aged or infirm person, because it is operated from either raised or lowered position by using one's foot to depress a single foot pedal **32** on an end of a crank arm lever **34** having a single, decidedly angular bend upwardly in a vertical plane. The foot pedal **32** is provided with a ribbed resilent pad **36**, of rubber or other suitable non-slip material. The pedal **32** is mounted on a rod **38** telescopically and adjustably secured within a sleeve **40** by a set screw **42**, which sleeve **40** is permanently secured in any convenient manner to a leg **44** of the crank arm lever **34**. This crank arm lever **34** is provided with a pivoting aperture **46** at the vertex of its angular bend for pivotally mounting it on a pivot bolt and nut **48** extending and secured through the opposite walls **50** of an upstanding channel member **52** mounted on a base **54** having a non-slip resilient pad **56** for resting on the commode room floor **22**.

The pivot base **54** is secured against slipping on the floor **22** by having an angled slotted arm **58** extending therefrom to cooperate with the commode bowl securing bolt **16**. If the bowl base **18** has but a single step as in FIG. 1, the elongated slot **60** adjustably extends about the end of the bowl securing bolt **16** to which it may be secured by a second nut similar to nut **28** on the bolt **16**. If the bowl base **18** is offset as at **20**, a flanged sleeve nut **62** is used through slot **60** to secure the pivot base arm **58** to the commode bowl bolt **16**, as in FIG. 3.

The other relatively shorter leg **64** of crank arm lever **34** is pivotally secured to one end of a link **66** whose other end **68** is offset at a right angle so as to pivotally extend into an ear **70** forming part of a bracket **72** which may be secured on either side of the commode in any convenient manner, as by an adhesive, countersunk

screws, or the like, to the bottom, edge or top side of the commode bowl seat **24**.

To provide for proper adjustment with commodes of different sizes, the link **66** is adjustable in length, having a pivoting clevis **74** and pivot **76** pivotally connected to lever leg **64** at one end. A threaded stem **78** of clevis **74** is threaded into one end of a telescopic sleeve **80**. Adjustably extending from and secured within the other end of this telescopic sleeve **80** by a set screw **82** is an L-shaped rod **84**, the short L leg thereof being the offset pivot **68** already referred to as pivotally extending into the pivot ear **70** of bracket **68**.

As thus far set forth, this device is completely operative for the purpose intended, except that it may be noisy. With the commode bowl seat **24** in raised position leaning against the water box **12** as shown, foot pressure on pedal **32** will pivot the seat **24** to over-dead-center position, allowing it to fall by gravity to the lowered position such fall being resisted, if desired, by foot pressure on the foot pedal **32**. With the seat **24** in lowered position, foot pressure on pedal end **32** will raise the seat from the commode supported position to over-dead-center to fall by gravity to against the water box **12**, where again, foot pressure may resist too speedy a fall.

However, an aged or infirm individual may find it too difficult to provide the foot pressure to eliminate noise at the end of either movement, and a cushioning cylinder, piston and piston rod combination **86** is adjustably pivotally secured at one end to the link **66** and pivoted thereto by a knuckle joint at **90**. An ear **92** in the piston connecting rod **94** at its other end extends about the pivot bolt **48** on which the crank arm lever **34** is pivoted. The piston rod **94** extends into cylinder **102** through a bushing **96** threadedly secured inside a nut **98** over a clamp ring **100** about the end of the wall of the cylinder **102**. The inside end of piston connecting rod **94** is threaded at **104** on which is threaded a nut **106** against which is supported a washer **108** forming a base for a resilient cupped piston **110**, a second nut **112** threaded on the end of connecting rod **94** being secured thereagainst by a lock washer **114**.

The knuckle joint **90** consists of a rod **116** internally threaded at one end over a threaded stem **118** extending through and secured to the end wall **120** by internal and external nuts **122**. Secured on the link rod **84** by a set screw **124** is a ring **126** from which extends a stem **128** having a ball end **130** which is pivotally held in a socket **132** in the end of rod **116** by a resilient clamp ring **134**. A bleed valve for the cylinder **102** is provided by a threaded aperture through the cylinder **102** in which is adjustably threaded a valve screw **136** having a tapered longitudinal surface slot **138** so that the rate of passage of air into and out of the cylinder may be adjustably controlled.

OPERATION

With the seat **24** in raised position as shown, foot pressure on foot pedal **32** through link **84** moves the seat **24** away from water box **12**, simultaneously pulling the cylinder **102** by means of its knuckle joint **90** and cupped piston **110** moves downwardly in cylinder **102** as viewed in FIG. 2, the cupped piston **110** permitting air to escape past it from below, while some slight additional air may enter slot **138** of bleeder valve **136**. After the seat **24** passes dead-center position through momentum provided by the initiating push, it then falls by gravity toward the lowered position on the rim of the toilet bowl **14**. Once past dead-center position, the cupped piston reverses its direction of movement to then move up toward cylinder wall **120** at the top end of cylinder **102**, compressing air between it and top cylinder wall **120**. The slowness with which such compressing air may escape through the bleeder valve **136** cushions the lowering of the toilet seat to the commode bowl **14**, and when it does reach fully lowered position, it does so in comparative quiet. When

the seat is to be lifted from the lower position on the rim of the toilet bowl **14**, the foot pedal **32** is again depressed, lifting the seat **24** by means of the link **66** and pulling the top end of the cylinder easily upward while air escapes from below the cupped piston to above it, with some air entering past bleeder valve **136**. When dead-center position is reached and passed through momentum, the movement of the cupped piston **112** is reversed to again move upwardly toward cylinder top wall **102**, compressing air thereabove, creating a partial vacuum therebelow, and the controlled escape of air through bleeder valve **136** cushions the movement of the toilet seat **24** from dead-center position to the position shown leaning against the water box **12**. Rod **84** bends slightly under pressure, when foot pedal **32** is pressed. This action brings seat **24** to dead-center. When foot pedal **32** is released this releases the pressure on rod **84** and it straightens, tipping seat **24** back against water tank **12**, being cushioned by the action of cylinder **102**.

In the drawings, like numbers refer to like parts, and for the purposes of explication, marshalled below are the numbered parts of the improved double action sanitary commode seat lifting and lowering device:

10 commode or toilet
12 water box
14 commode bowl
16 bowl securing bolts on **14**
18 base of **14**
20 offset on base **18**
22 commode room floor
24 toilet seat
26 pivot bolts for **24**
28 nut on bowl bolts **16**
30 seat positioning device
32 foot pedal
34 crank arm lever
36 resilient pad on **32**
38 telescoping rod of **34**
40 telescopic sleeve
42 set screw securing rod **38** in sleeve **40**
44 rod leg of **34**
46 pivoting aperture of **34**
48 pivot bolt and nut for **46**
50 opposite walls of **52**
52 upstanding channel
54 base for **52**
56 pad on base **52**
58 slotted angled arm of **54**
60 elongated slot in **58**
62 flanged sleeve nut
64 other leg of **34**
66 link from **34** to **24**
68 pivoting offset end of **84**
70 ear on bracket **72**
72 bracket on seat **24**
74 pivoting clevis on link **66**
76 pivot for **66** on **64**
78 threaded stem on **74**
80 telescopic sleeve of **66**
82 set screw
84 L-shaped rod of link **66**
86 cushioning piston, piston ring and cylinder combination
90 knuckle joint
92 ear in end of **94**
94 piston connecting rod
96 bushing
98 nut on **102**
100 clamp ring under **98**
102 cylinder
104 threaded end of **94** inside **102**
106 nut of **104**
108 washer against **106**
110 resilient cupped piston

112 second nut on **104**
114 lock washer for **112**
116 rod of **90**
118 threaded stem
120 cylinder end wall
122 nuts on **118**
124 set screw in ring **126**
126 ring on **84**
128 stem on **126**
130 ball end on **128**
132 socket in **116**
134 clamp ring
136 valve screw
138 slot

Although this invention has been described in considerable detail, such description is intended as being illustrative rather than limiting, since the invention may be variously embodied, and the scope of the invention is to be determined as claimed.

Having thus set forth and disclosed the nature of this invention, what is claimed is:

1. A sanitary commode seat lifting and lowering device comprising a double action single foot pedal usable in alternately lifting and lowering a commode seat, said device comprising a crank arm lever having a single, decidedly angular bend upwardly in a vertical plane, means for pivotally supporting said crank arm lever at the vertex of said annular bend so that said crank lever arm may pivot in a vertical plane on the floor of the commode room, said crank arm lever comprising a long foot pedal lever leg and a relatively shorter commode seat pivoting leg, a link pivoted to said shorter leg at one end and pivotally securable at its other end to the commode seat whereby foot pressure on said foot pedal lifts the commode seat to over dead center in either direction to then permit the commode seat to continue to either raised or lowered position.

2. The device of claim **1**, and means for cushioning the movement of the commode seat in falling beyond dead center position in either direction.

3. The device of claim **2**, said cushioning means comprising a pneumatic cylinder, a piston therein, and a piston rod on which said piston is mounted for movement within said cylinder, one end of said piston rod and cylinder being pivoted on said crank arm lever pivotal supporting means, the other end of said rod and cylinder being adjustably secured to said link intermediate the ends of said link.

4. The device of claim **3**, and an air valve extending through a wall of said cylinder for controlling the speed of falling movement of said commode seat.

5. The device of claim **4**, said air valve being an adjustable air bleeder valve comprising a threaded aperture in a wall of said cylinder and a valve screw adjustably threaded therein, said valve screw having a tapered slot extending longitudinally of its threaded surface.

6. The device of claim **1**, said crank arm lever pivotally supporting means comprising an upstanding channel member, a pivot secured through opposite sides of said channel member, said pivot extending through a pivot aperture in said crank arm lever at the vertex of said angular bend.

7. The device of claim **6**, and non-slip means resiliently supporting said channel member on the commode room floor.

8. The device of claim **6**, and an apertured arm extending from said upstanding channel member for reinforcing cooperation with a commode securing member.

9. The device of claim **1**, said long foot pedal lever leg of said crank arm lever and said link each comprising a telescopable sleeve and rod adjustably secured therein, resilient, non-slip means on said foot pedal end of said crank arm lever and on the bottom of said upstanding channel means, and means for detachably pivoting said link other end the commode seat comprising a bracket securable to a convenient surface of the commode seat, and a pivot ear on said bracket, the end of said link being offset to pivot in said pivot ear.

10. The device of claim **5**, said crank arm lever pivotally supporting means comprising an upstanding channel member, a pivot secured through opposite sides of said channel member, said pivot extending through a pivot aperture in said crank arm lever at the vertex of said angular bend, and an apertured arm extending from said upstanding channel member for reinforcing cooperation with a commode securing member, said long foot actuatable leg of said crank arm lever and said link each comprising a telescopable sleeve and rod adjustably secured therein, resilient, non-slip means on said food pedal and on the bottom of said upstanding channel means, and means for detachably pivoting said link end to the commode seat comprising a bracket securable to a convenient surface of the commode seat, and a pivot ear on said bracket, the end of said link being offset to pivot in said pivot ear.

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LAVERNE D. GEIGER, Primary Examiner

D. MASSENBERG, Assistant Examiner