Oct. 4, 1960 L. G. LOTTENBERG 2,954,566

TOILET STRUCTURE

Filed March 19, 1957 2 Sheets-Sheet 1

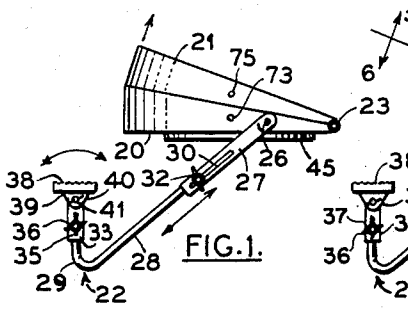


FIG.1.

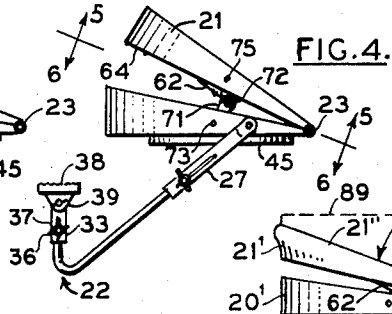


FIG.4.

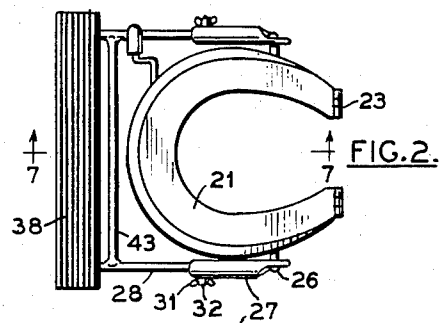


FIG.2.

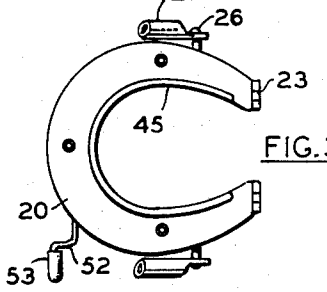


FIG.3.

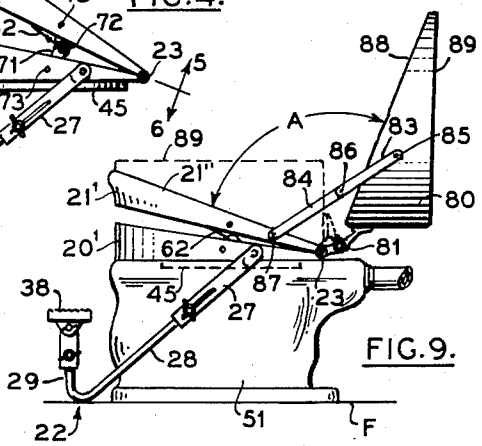


FIG.9.

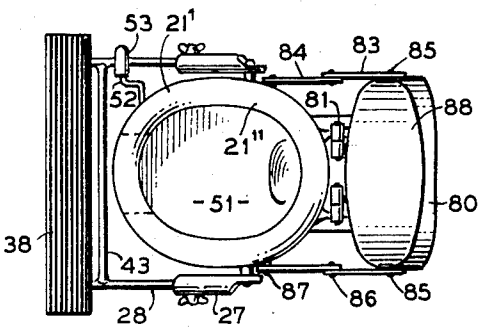


FIG.10.

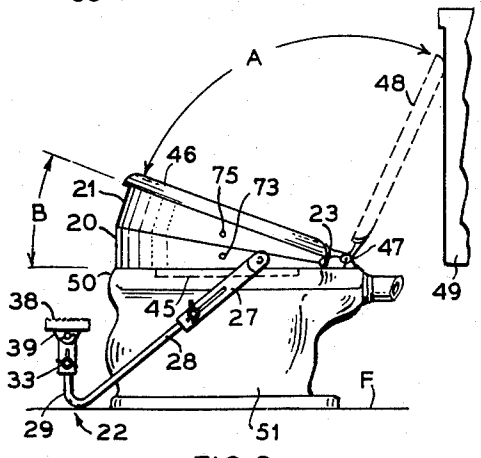


FIG.8.

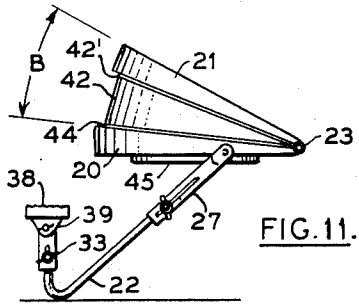


FIG.11.

INVENTOR.
LOUIS G. LOTTENBERG
BY J. B. Burke
ATTORNEY

Oct. 4, 1960 L. G. LOTTENBERG 2,954,566

TOILET STRUCTURE

Filed March 19, 1957 2 Sheets-Sheet 2

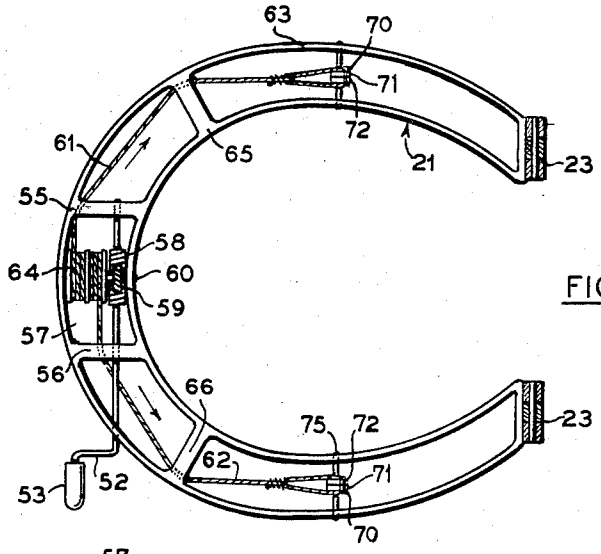


FIG.5.

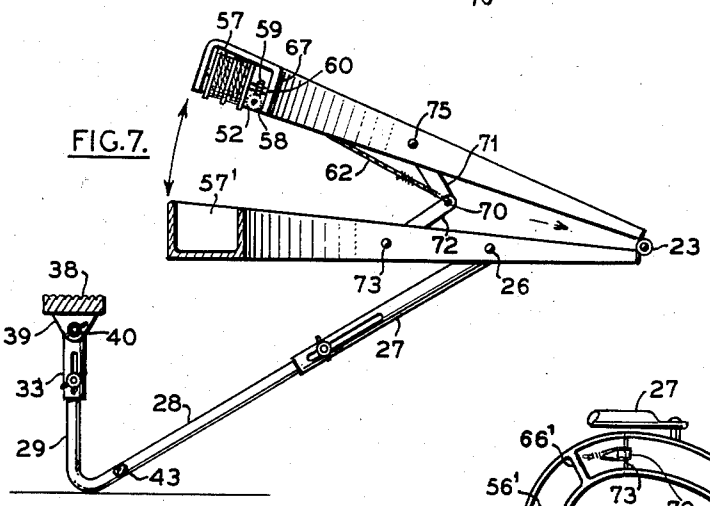


FIG.7.

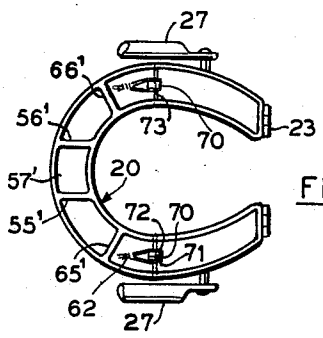


FIG.6.

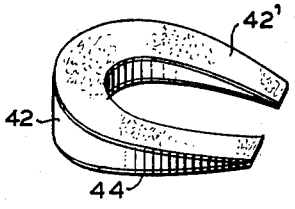


FIG.12.

INVENTOR.
LOUIS G. LOTTENBERG
BY J. B. Burke
ATTORNEY

United States Patent Office

2,954,566

Patented Oct. 4, 1960

2,954,566

TOILET STRUCTURE

Louis G. Lottenberg, Forest Hills, N.Y., assignor to The Trea-Boye Corporation, Brooklyn, N.Y., a corporation of New York

Filed Mar. 19, 1957, Ser. No. 647,146

6 Claims. (Cl. 4—254)

This invention relates to the art of water closets or toilet structures and more particularly concerns a device for adjustably elevating a toilet seat at such an angle that a person seated thereon may be supported in a more natural, healthful, and effective position for performing body functions.

It is a principal object of the invention to provide a device adapted for insertion between the top of a toilet bowl and a seat pivotally secured thereto, so that the seat can be disposed at an angle best assured to produce the most effective physiologic results.

It is a further object to provide a device for adjustably supporting a toilet seat at an angle to the top of a toilet bowl, and including means for adjustably supporting the feet of the user.

It is a further object to provide a toilet seat device of the character described with means for mounting the device on a toilet bowl, the device being arranged to be quickly disposable on and removable from the bowl.

It is a further object to provide a device for elevating a seat of a toilet bowl at an angle to the top of the bowl, the device including an adjustable foot rest carried on supports pivotally secured to the body of the device.

It is a still further object to provide a toilet seat provided with adjustable means for elevating the seat at an angle to the horizontal top of a toilet bowl, the seat being provided with a cover which is pivotally attached to the seat and supported at a predetermined angle with respect to the seat when the cover is opened to serve as a seat back.

It is another object to provide a seat having a cover of the character described with the cover being shaped so that it has an external substantially horizontal top surface when closed.

Other and further objects and advantages of the invention will become apparent from the following detailed description and the drawings. The scope of the invention is defined by the appended claims.

Toilets and water closets in general use have the top surfaces of the bowls disposed horizontally and the seats which are pivotally mounted thereon are likewise supported horizontally in normal use. It has heretofore been suggested to provide a support for a toilet seat secured in a fixed position to a toilet bowl or to a toilet seat to dispose the seat at a desired angle of slant with respect to the bowl. Such supports have failed to gain general use because of a number of inherent difficulties. The prior known seat supports failed to provide means for supporting the feet and legs of the user in a comfortable and proper position for most effective use of the seat. No provision was made for ready removal of the support from the seat and bowl when so desired. The permanent type seat support disposed the seat at an arbitrary selected angle which might be suitable for one user at one particular time but was entirely unsuitable for other users. No adequate provision was made for supporting the back of the user.

The present invention is directed at overcoming the difficulties and disadvantages of the prior known seat supports in a relatively simple, effective and economical manner.

According to the invention, there is provided a pair of plates formed as generally U-shaped hollow wedges. The plates are thickest at the bights and taper downwardly to the ends of the arms. The plates are pivotally secured together by hinges at the free ends of the arms. A manually controlled mechanism is disposed between the plates for separating the plates angularly to a desired extent. An optimum range of angular separation of the plates of about ten to thirty degrees has been determined to produce best physiologic results. The adjusting mechanism has been so arranged as to limit separation of the outer sides of the plates to this optimum range of adjustment. A foot rest is supported on telescopic arms pivotally attached to the plates so that the foot rest can be adjusted for the most comfortable position of the user. Suitable projecting members are provided on the device for extending over the rim of the toilet bowl to removably retain the device thereon. The angular adjusting mechanism is so located that the user can operate it when seated thereon. This is important since the user may desire to lower the seat prior to demounting. Prior known seat supports often disposed the user in such an awkward position that arising from the seat became a difficult operation.

I have determined that in order for a person to defecate most effectively and completely, the thighs should be supported at an angle to the horizontal ranging from about ten to about thirty degrees. At less than ten degrees no important salutary effect is accomplished. At more than thirty degrees, the legs are disposed in an awkward and uncomfortable position. A condition of strain is set up in lower bowel and the bowel is bent at such an angle from the vertical that defecation is performed only with difficulty. The particular angle of tilt which should be imparted to a toilet seat will depend on the size, condition of health, and personal preference of the user. The proper angle of tilt can only be obtained if the seat support is readily adjustable by the user. I have further determined that the back of the user must be supported at a proper angle with respect to his elevated thighs. This angle ranges from about eighty to hundred degrees depending on the physiology of the user. In general, when the thighs of the user are elevated at an angle of about twenty degrees and the back of the user is substantially fully supported at an angle of about ninety degrees, the most effective posture is obtained. Then the bowels can be cleared with substantially no strain. Maximum effect is given to gravitational force to aid in clearing the bowels. This important effect occurs because the large bowel is then in a substantially straight vertical position. Prior known seat elevating devices made no provision for proper support of the back of the user. Thus the user was forced into a position of strain to maintain the trunk upright. Most often the trunk was bent forwardly. This produced most undesirable physiologic effects. Kinking occurred in the large colon. In order to clear the bowels strain was placed upon the diaphragm and other internal muscalature. The time of defecation was unduly prolonged. Circulation was inhibited in the pelvic region, and the internal pressure often embarassed heart action and respiration.

In the present invention the user is disposed in a position which accommodates the physiologic needs of the human body more effectively than has hitherto been possible.

For persons in normal good health, the present device results in fuller, more rapid and more satisfying evacua-

tion of urine and clearance of the bowels. The invention is especially valuable for children since it serves to train the internal musculature for natural, effortless, rapid defecation. For women in general use of the present invention results in relieving of pressure on reproductive organs during performance of excretory functions. In cases of pregnancy, abdominal hernia, cardiac conditions, etc., greater freedom from internal physiologic strain is obtained during use of the device than has heretofore been possible. With the present device the user sits back relaxed. Circulation is unimpeded. Thus the tendency for hemorrhoids, thromboses, etc., to develop is minimized. Constipation conditions due to improper posture during defecation are relieved.

Fig. 1 is a side elevational view of the device embodying the invention. Fig. 2 is a top plan view of the device. Fig. 3 is a bottom plan view of the device. Fig. 4 is a side elevational view of the device with parts thereof angularly separated. Fig. 5 is a plan sectional view on an enlarged scale taken on lines 5—5 of Fig. 4. Fig. 6 is another plan sectional view taken on lines 6—6 of Fig. 4. Fig. 7 is a longitudinal sectional view of the device taken on lines 7—7 of Fig. 2. Fig. 8 is a side elevational view of the device mounted for use with a toilet, seat, and cover. Fig. 9 is an elevational view of another form of the invention. Fig. 10 is a top plan view of the device of Fig. 9. Fig. 11 is an elevational view of another form of the device. Fig. 12 is a perspective view of a spacer member used in the device of Fig. 11.

In Figs. 1–8 there is shown a pair of generally U-shaped hollow wedges or plates **20**, **21**. The apical or bight front ends of the plates are wider or thicker than the rear free ends of the arms thereof. The plates are pivotally secured together by hinges **23** with their openings in general alignment. For economy in manufacture and to facilitate assembly the plates are substantially identical in form. The plates may be metal castings, plastic moldings, or the like. Pivotally attached to the lower plate **20** is a foot rest support. The support includes a pair of tubular arms **27** pivotally secured by pins **26** to plate **20**. A pair of generally V-shaped rods **22** having longer arms **28** and shorter arms **29** are arranged so that arms **28** are telescopically adjustable in tubes **27**. Tubes **27** have slots **30** through which extend bolts **32** secured by wing nuts **31**. By means of the bolts and wing nuts the arms **28** are telescopically adjustable in tubes **27**. The arms **29** are inserted into upright tubes **33**. These short tubes are provided with slots **35**, wing nuts **36**, and bolts **37** for telescopic adjustment of the tubes **33** and the arms **29**. A rectangular foot rest **38** is pivotally secured to rods by brackets **39** further provided with bolts **40** and wing nuts **41**. A cross bar **43** mechanically strengthens the foot rest assembly by joining the arms **28** near the apex.

At the flat bottom of plate **20** is a U-shaped ridge **45** located at the inner rim of the curved opening between the arms of the plate. This ridge projects downwardly and serves as a means to anchor the device on the top horizontal rim **50** of a toilet bowl **51** as shown in Fig. 8, while permitting the device to be readily removable from the bowl.

The angular adjusting mechanism for the plates **20**, **21** is best shown in Figs. 4–7. The device is provided with a crank including a shaft **52** having a crank handle **53** for manual operation thereof. The shaft **52** extends transversely through an apical portion of plate **21** into the hollow interior thereof. The plate **21** has a pair of longitudinally extending ribs **55**, **56** which define in part the central cavity **57**. Shaft **52** is rotatably journaled in ribs **55**, **56** as well as in the outer wall of the plate. Mounted on shaft **52** in cavity **57** is a worm **58**. A worm wheel or gear **59** is mounted in a shaft **60** to engage in the helical groove of worm **58**. Shaft **60** extends along an axis of symmetry of the U-shaped plate **21**. The shaft **60** is rotatably journaled in the inner and outer walls **67** and **63** respectively of the plate at cavity **57**. A double reel or spool **64** is mounted on shaft **60** to rotate therewith. Two flexible wire cables **61**, **62** are wound on the spool in opposite directions so that when the shaft **60** rotates the cables are wound up on the spool or unwound from the spool together. The cables extend from the spool through apertures in ribs **55**, **65** and **56**, **66** respectively. The cables terminate at eyelets **70**. Each eyelet **70** pivotally attaches two links **71**, **72**. Links **71** are pivotally attached by pintles **73** to plate **20**. Links **72** are pivotally attached by pintles **75** to plate **21**.

In operation of the device, it is disposed between the seat **46** and the bowl **51** of a water closet as best shown in Fig. 8. The seat is pivotally attached to a bowl by a hinge **47**. The back of the cover is supported by the tank **49** or other means at an obtuse angle to the top of the bowl. The angle A shown in Fig. 8 ranges from about eighty degrees with respect to seat **46** when the plates **20**, **21** are fully opened to about one hundred degrees when the plates are closed together. Normally the plates **20**, **21** together define an angle B of about ten degrees between the top of the bowl and the bottom of the seat. Each of the shaped plates being about a five degrees wedge. Ridge **45** serves to retain the device just within the rim of the bowl. It will be noted that the device may readily be placed on the bowl and removed therefrom when the seat is lifted. The apex of the foot rest support **22** rests on the floor F. By means of the several wing nut adjustments the foot rest can be spaced in a desired position for most comfortable seating of a user of the device. The plates **20**, **21** may be angularly adjusted by turning handle **53** to wind the cables **61**, **62** up on spool **64**. As the shaft **52** rotates it turns worm **58** and worm gear **59** to turn the spool. The hinged links **71**, **72** are normally disposed angularly with respect to each other when the plates are closed so that when the cables are drawn in on to the spool the links open and plates **20**, **21** separate angularly. The range of adjustment of the plates is about twenty degrees so that the seat **46** is lifted through an angular range of about ten to thirty or at most thirty-five degrees. If angle B is materially less than ten degrees the beneficial physiologic effects obtained by the present device are not obtainable. If the angle B is too great the user is disposed in an uncomfortable position with excess strain on the spine and internal musculature. In the optimum range of elevation of the seat the back of the person seated thereon is caused to rest on the seat cover **48**. In conventional water closets the cover is not usable as a back rest because the seat is horizontal and the cover is usually disposed at a backwardly inclined angle. If the user rests his back on the cover he is thrown off balance into an uncomfortable, awkward and impractical position. The present device makes important and effective use of this backward inclination of the cover so that it serves as a back rest for the user. The range of adjustment of angle A is about eighty to one hundred degrees with respect to the top of the seat **46** which is satisfactory to support the user in a comfortable position.

Usually the angle B of the device will be adjusted before the user seats himself on the seat **46**. If desired the user can sit on the seat with the plates **20**, **21** in a closed position and turn the handle to separate the plates. There will be sufficient mechanical advantage in the worm and worm gear mechanism to permit this adjustment in spite of the weight of the user on the seat. It will be faster and more convenient however if the plates **20**, **21** are adjusted at the desired angle B before the user sits on the seat. As another method the plates can be fully opened. Then the user can sit on the seat and turn handle **53** to lower plate **21**. The weight of the user will assist in making this adjustment. The friction between the worm and worm gear will be sufficient to retain the selected angle between plates **20**, **21** while the user is seated thereon. Under certain conditions, particularly if

the plates are set at the maximum angle B, the user may desire to lower the seat before demounting therefrom. This may be done easily by turning handle **53**.

When the plates **20**, **21** are closed spool **64** projects somewhat into cavity **57'** of plate **20**. This cavity underlies the cavity **57** in plate **21** and corresponds therewith. Ribs **55'**, **56'**, **65'** and **66'** in plate **20** shown in Fig. 6 correspond with and abut ribs **55**, **56**, **65**, **66** respectively when the plates are closed. Then the links **71**, **72** are disposed in a minimum angular position with the cables **61**, **62** extending therebetween and unreeled from the spool **64** to a maximum extent.

In Figs. 9 and 10 are shown a form of the invention in which the upper portion of plate **21'** is formed with a generally oval curved top **21''** so that it can serve as a seat and seat **46** may be dispensed with. Plate **21'** has a generally oval annular wedge shape. It is pivotally attached to the similarly shaped annular oval wedge shaped lower plate **20'** by hinges **23** in the same manner as shown in Figs. 1–8. Ridge **45** removably retains the device on the bowl **51**. Cover **48** is replaced by a wedge shaped oval cover **80**. This cover is attached by hinges **81** to plate **21'**. A pair of links **83**, **84** are disposed at each of the sides of the cover **80**. Links **83** are pivotally secured to the cover by pins **85**. The links are pivotally secured together by pins **86**, and links **84** are pivotally secured to plate **21'** by pins **87**. In this arrangement, plates **20'**, **21'** can be angularly adjusted by means of handle **53** in the same manner as plates **20**, **21**. The cover **80** is so arranged that as seat **21'** rises with the cover open to serve as a seat back, a constant angle A of about ninety degrees is maintained between the side **88** of the cover and the top surface **21''** of the seat. When the seat **21'** is fully lowered or substantially fully lowered and the cover **80** is closed, the top side **89** of the cover assumes a horizontal position as shown in dotted lines so that the device can be used as a bench. The device of Figs. 9 and 10 thus constitutes an angularly elevated toilet seat readily removable from the toilet bowl and provided with its own seat back. The foot rest assembly which is pivotally attached to the plate **20'** is adjustable in the same manner as for the device of Figs. 1–8.

If desired the manually operated crank **52** and associated mechanism can be replaced by an electrically driven motor to elevate the seat. The ridge **45** can be formed as a plurality of depending elements flexible or inflexible for engaging the rim of the bowl.

Once an optimum elevation angle B for seat **46** has been determined, it is possible to provide fixed means to elevate the seat at this angle. One way this can be done is to replace the angularly disposed plates **20**, **21** by a single solid or hollow generally U-shaped wedge or an equivalent seat elevating member. The foot rest support **22** will be pivotally attached to this member and foot rest **38** will be adjustably elevatable and spaceable from the member. This adjustment of the foot rest provides a means for elevating the thighs of the user of the device in addition to the elevating function performed by the angularly inclined seat. It is of particular importance to note that in order for the invention to be physiologically effective the angle of inclination of the thighs of the user must be downward from knees to hips. To accomplish this the seat **46** is inclined with its front portion disposed in an upper plane and its rear portion disposed in a lower plane with respect to the top of the bowl **51**.

In Fig. 11 is shown another form of the invention in which the wedge plates **20**, **21** are pivotally secured together by hinges **23** in the same manner used for the form of the device shown in Figs. 1–8. Instead of using a manually operable mechanism to raise and lower the plate **21** there is provided instead a generally U-shaped wedge block **42** as best shown in Fig. 12. This block may be provided with top and bottom layers **42'**, **44** respectively of leather, rubber or other material having a roughened surface. When the block **42** is disposed between the plates **20**, **21** it serves as a spacer member to elevate plate **21** at a desired angle. If desired, the user may be provided with a plurality of such spacers **42** having different wedge angles B so that the bight of the spacer blocks have different thicknesses. Such a set of spacers may range from 5° to 20° in 5° increments. The user may then select the particular spacer which elevates the plate **21** at a desired angle with respect to the top of the bowl **51**. The spacer member may be made in various shapes and need not necessarily be wedge shaped, but it must provide rigid support for the plate **21** in an elevated position without slipping or sliding out of position.

What is claimed and desired to protect by Letters Patent of the United States is:

1. A toilet structure for supporting the back of a person upright with a backward inclination while raising the person's thighs to produce a substantially vertical positioning of the person's large bowel, comprising a toilet bowl having a horizontal, open top rim, a cover pivotally attached to said bowl and supportable thereon in an upright position with a backward inclination with respect to the bowl, an open seat pivotally attached to the bowl, and a seat elevating structure disposed between the seat and bowl and quickly removable therefrom, said seat elevating structure comprising a generally U-shaped first wedge having a curved bight and curved arms defining a curved opening therebetween, said wedge having a maximum thickness at said bight and tapering out to minimum thickness at the free ends of the arms, said wedge having a lower side adapted to rest on the open top rim of the bowl, said wedge having a depending member located at the inner edge of said lower side at said curved opening and projecting vertically downwardly therefrom to enter inside the top rim of the bowl to anchor the wedge thereat while permitting free removal of the wedge from the bowl and seat, a pair of telescopic rods pivotally attached to opposite sides of the wedge on said arms, a foot rest adjustably supported on forward ends of said rods so that the foot rest is adjustable in height and forward spacing with respect to the bight of the wedge, a second U-shaped wedge having a curved bight and curved arms, the curved arms of the second wedge being joined pivotally to free ends of the arms of the first wedge so that the second wedge overlies the first wedge and is angularly separable therefrom, and means for retaining the wedges in a selected angular separation, the thickness of the bights of the first and second wedges fixing the minimum angular range of elevation of said seat with respect to said rim at an angle ranging approximately from ten to thirty degrees.

2. A toilet structure for supporting the back of a person upright with a backward inclination while raising the person's thighs to produce a substantially vertical positioning of the person's large bowel, comprising a toilet bowl having a horizontal, open top rim, a cover pivotally attached to said bowl and supportable thereon in an upright position with a backward inclination with respect to the bowl, an open seat pivotally attached to the bowl, and a seat elevating structure disposed between the seat and bowl and quickly removable therefrom, said seat elevating structure comprising a generally U-shaped first wedge having a curved bight and curved arms defining a curved opening therebetween, said wedge having a maximum thickness at said bight and tapering out to minimum thickness at the free ends of the arms, said wedge having a lower side adapted to rest on the open top rim of the bowl, said wedge having a depending ridge located at the inner edge of said lower side at said curved opening and projecting vertically downwardly therefrom to enter inside the top rim of the bowl to anchor the wedge thereat while permitting free removal of the wedge from the bowl and seat, a pair of telescopic rods pivotally attached to opposite sides of

the wedge on said arms, a foot rest adjustably supported on forward ends of said rods so that the foot rest is adjustable in height with respect to the wedge and is adjustable in spacing forwardly from the bight of the wedge, a second generally U-shaped wedge having thicker and thinner opposite end portions, the thinner end portion being joined pivotally to free ends of the arms of the first wedge so that the thicker portion of the second wedge overlies the curved bight of the first wedge, and means for retaining the separated wedges angularly separated, the thickness of the bights of the first and second wedges fixing the minimum angular range of elevation of said seat with respect to said rim at an angle ranging approximately from ten to thirty degrees.

3. A water closet structure according to claim 2 wherein said means is a mechanism operatively connecting the first and second wedges.

4. A water closet structure according to claim 2, wherein said means is a manually operable mechanism operatively connecting the first and second wedges, said

mechanism being provided with a crank for opening and closing the wedges.

5. A water closet structure according to claim 2, wherein said means is a U-shaped block removably disposed between the first and second wedges.

6. A water closet structure according to claim 2, wherein said means is a spacer member removably disposed between the first and second wedges, said member being provided with friction means for retaining the member between the wedges.

References Cited in the file of this patent

UNITED STATES PATENTS

775,029	Dezendorf	Nov. 15, 1904
850,458	Bagley	Apr. 16, 1907
1,085,468	Nixon	Jan. 27, 1914
1,336,294	Hackman	Apr. 6, 1920
1,650,261	Carlson	Nov. 22, 1927