Jan. 17, 1950 R. HUGHES 2,494,813

TOILET SEAT STRUCTURE

Filed Sept. 20, 1944 3 Sheets-Sheet 1

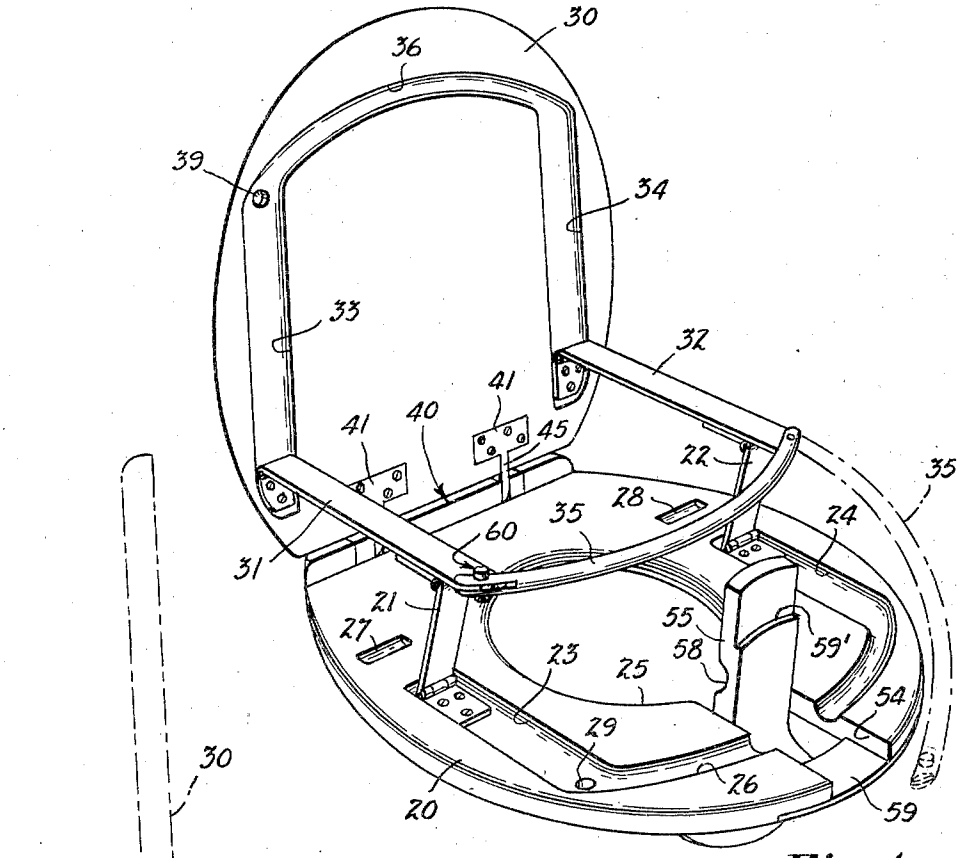


Fig. 1

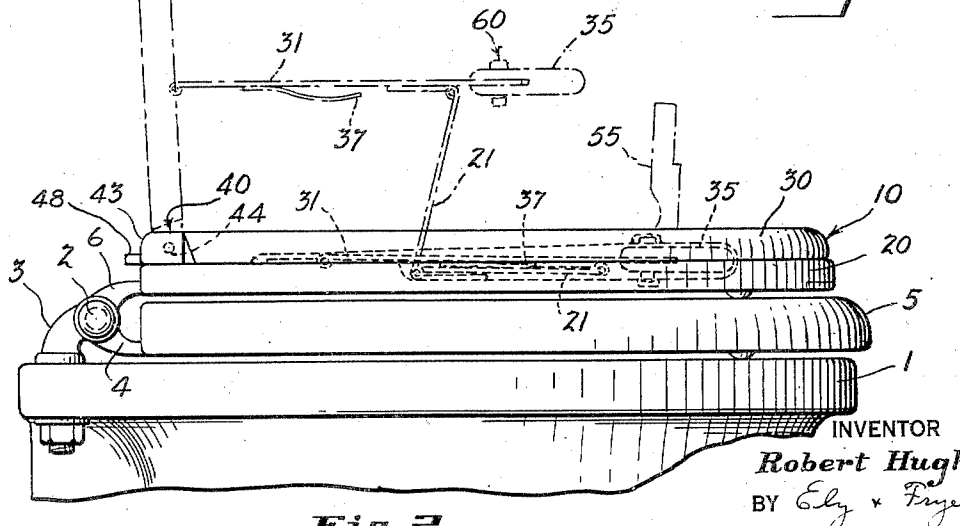


Fig. 2

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TOILET SEAT STRUCTURE

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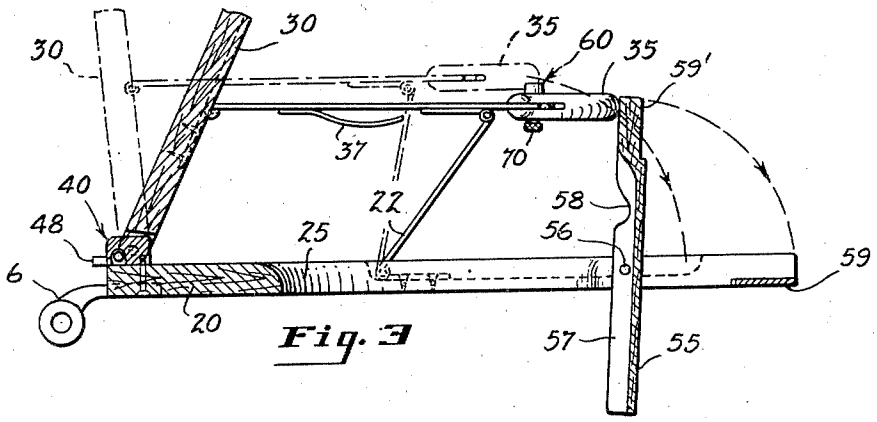


Fig. 3

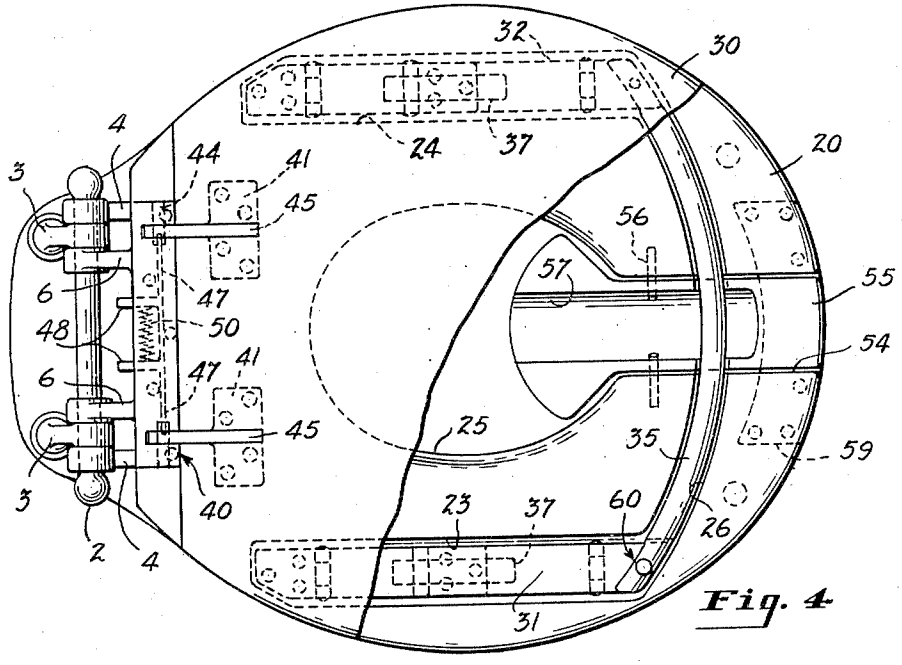


Fig. 4

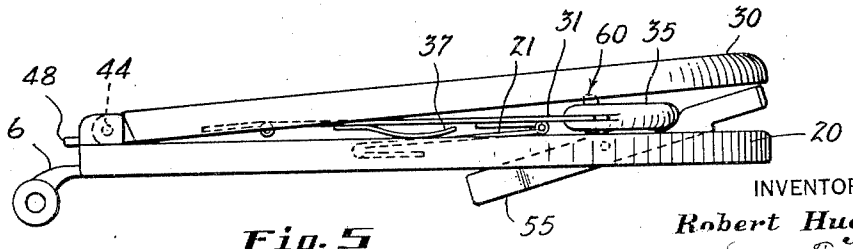


Fig. 5

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TOILET SEAT STRUCTURE

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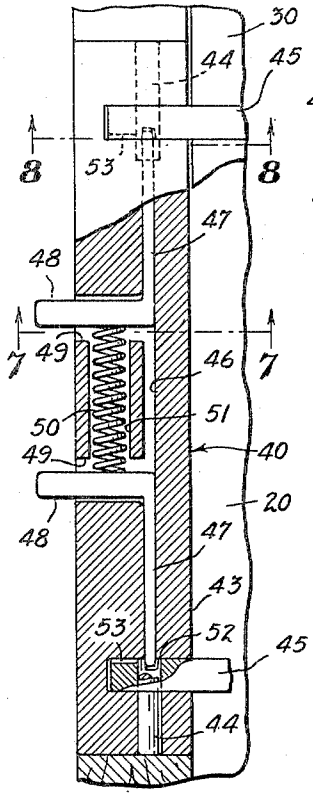


Fig. 6

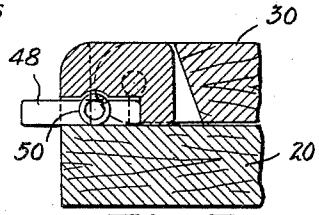


Fig. 7

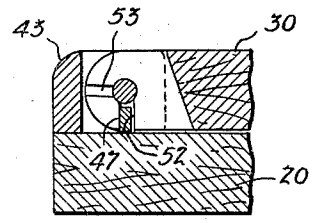


Fig. 8

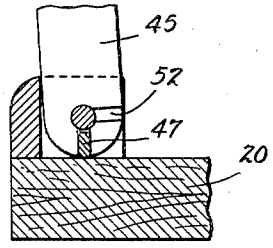


Fig. 9

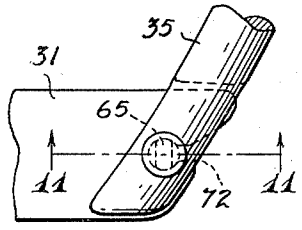


Fig. 10

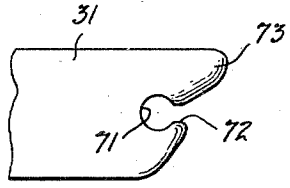


Fig. 13

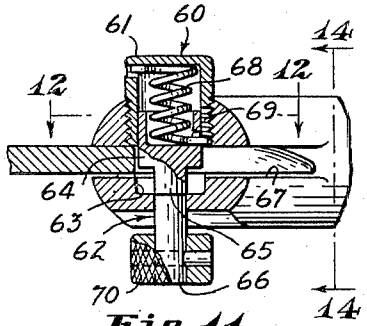


Fig. 11

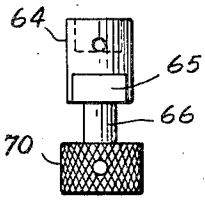


Fig. 14

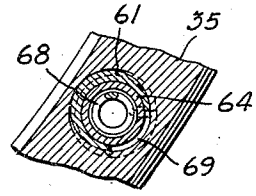


Fig. 12

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TOILET SEAT STRUCTURE

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Application September 20, 1944, Serial No. 554,913

7 Claims. (Cl. 4—235)

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This invention relates to an improvement in toilet seats for infants and children and, more particularly, to a toilet seat which may be incorporated in the standard toilet seat structure and, when not in use, may serve as the cover for a standard toilet seat.

Heretofore, the infants' and children's toilet seats which have enjoyed the widest commercial sale were separate auxiliary seats designed to fit on the opening of the standard toilet seat and having pivoted arms and a back which permitted the auxiliary seat to be collapsed when not in use. While such seats were a considerable advance, from the point of convenience, over the prior infants' commode, such auxiliary seats had many disadvantages which this invention advantageously overcomes.

The principal disadvantage of the prior art auxiliary infants' toilet seats is that they had to be removed after use and, consequently, were secured by frictional means which gripped the inner rim of the adult toilet seat upon which the auxiliary separate seat was placed; as a result, the auxiliary seats cluttered the bathroom in which the toilet was located; the mother was often faced with the choice of trying to juggle both the infant and the auxiliary seat while putting the seat in place of making two trips to the bathroom, one to put the auxiliary seat in place and the other to take the infant to the bathroom; the frictional means for holding the auxiliary seat on the adult seat eventually ruined the finish of the adult seat; and, still further, the frictional means for holding the auxiliary seat were not secure, so that a restless or active child could bounce until the auxiliary seat became disconnected, pitching the child and seat on the bathroom floor and thereby possibly injuring the child and, in any event, so frightening the child that the training period was greatly prolonged or postponed.

I have overcome the foregoing disadvantages by providing, in place of the usual lid on an adult toilet seat, an improved lid which is comprised of two halves pivoted along a horizontal axis parallel to the axis on which the seat and lid are usually pivoted. When the two halves are closed together, the lid is no thicker than the usual lid, when open, the upper half serves as a back and the lower half serves as a seat for the infant's toilet seat. When not in use, the infant's seat does not clutter the bathroom. By suitable locking means, the seat may be conveniently opened with one hand, thus permitting the mother to open the seat while holding the baby, and yet

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when closed, the infant's toilet seat cannot be accidentally opened. The adult seat is never injured. And finally, the infant's toilet seat is securely and substantially permanently fastened to the toilet and the infant may be securely held in the seat. Three or more section toilet seats, in which one section constituted an infant's toilet seat, have been proposed heretofore, but no such proposed structures have provided more than a few of the foregoing advantages and have possessed, instead, disadvantages which worked against their actual successful use.

Another object of my invention is to provide a permanently attached automatic urine guard or deflector which is in an operative position when the seat is in use and in an inoperative position when the seat is not in use.

A still further object of my invention is to provide safety means which will securely hold an infant on the seat and a locking means therefor which is automatically closed but can be opened only by coordinated movements readily made by an adult but generally impossible for a child until the child is sufficiently advanced to need no guard to prevent it from falling off the seat.

Other and further objects and advantages of this invention will be apparent from the following specification, claims, and drawings in which:

Fig. 1 is a perspective view of a device made according to this invention in an opened position to provide a child's toilet seat.

Fig. 2 is a side elevation of the child's toilet seat shown in Fig. 1.

Fig. 3 is a fragmentary detail vertical section of a device made according to this invention showing the child's toilet seat being partly closed.

Fig. 4 is a plan view, partly broken away, showing the device of Fig. 1 closed to form a lid.

Fig. 5 is a detail side elevation of the device shown in Fig. 4 partly opened.

Fig. 6 is a fragmentary detail, partly in section, of the hinge preferably employed in this invention.

Fig. 7 is a vertical section taken along the line 7—7 of Fig. 6.

Fig. 8 is a vertical section taken along the line 8—8 of Fig. 6.

Fig. 9 is a view similar to Fig. 8, but taken with the seat open, as in Fig. 1.

Fig. 10 is a detail plan view of the lock employed in my safety bar.

Fig. 11 is a vertical section, partly broken away, taken along the line 11—11 of Fig. 10.

Fig. 12 is a horizontal section taken along the line 12—12 of Fig. 11.

Fig. 13 is a detail plan view of the keeper slot in the end of the arm.

Fig. 14 is a detail elevation of the bolt in the lock shown in Figs. 10 and 11, said elevation being taken from the plane 14—14 of Fig. 11 perpendicular to the planes of illustration of Figs. 10 and 11.

In the drawings, 1 is a conventional toilet bowl upon which is hingedly mounted the usual adult seat 5 and a lid 10 made according to this invention. As shown in the drawings, the hinge for the seat 5 and lid 10 comprises a horizontal pin 2 supported by the trunnions 3 bolted to the bowl 1. The seat 5 is pivoted on the hinge pin 2 by means of a bell crank 4 screwed to the underside of the seat 5 and the lid 10 is similarly mounted on the pin 2 by means of the crank arm 6. This hinge construction is substantially standard and any similar hinge and mounting means may be employed.

The lid 10 is comprised of two substantially congruent horizontal halves, a seat 20 and seat back 30, joined by a special locking hinge 40 mounted on the seat 30, said hinge 40 having an axis parallel to the pin 2 and having hinge plates 41 secured in the seat back 30. As shown in Fig. 2, when the lid 10 is closed, it is possible for the lid 10 to be of about the same thickness as the conventional toilet seat lid and to have substantially the same appearance.

The seat 20, having a suitably sized opening 25, carries on either side a pair of metal straps 21 and 22 hinged in suitable recesses 23 and 24 to swing from a substantially upright position forwardly to a horizontal position. The seat back 30 carries a pair of metal arms 31 and 32 hinged in suitable recesses 33 and 34 in the seat back 30. The arms 31 and 32 are hinged to the straps 21 and 22, respectively, rearwardly of the forward ends of the arms 31 and 32, so that the arms are raised when the child's toilet seat is opened and are collapsed into the corresponding recesses when the child's seat is closed to form the lid 10.

The forward end of the arm 32 carries the pivotally mounted arcuate safety bar 35, i. e. a forwardly bowed restraining bar, which may be swung open, as shown in dotted lines in Fig. 1, or closed, as shown in solid lines, to lock a child on the seat by means of the lock 60 which latches in a keeper slot in the forward end of the arm 31. The seat 20 and back 30 are provided with suitable arcuate recesses 26 and 36 to receive the safety bar 35 when the safety bar is locked and the seat is closed. Additional recesses 27 and 28 are provided in the seat 20 for the pins of the hinges securing the arms 31 and 32 to the back 30 and recesses 29 and 39 are provided in the seat and back, respectively, to receive the vertically projecting portions of the lock 60.

From the foregoing, it should be apparent that the back 30 may be tightly closed upon the seat 20 to form the lid 10, the several recesses accommodating the arms and safety bar structure when the seat is closed. Welded or otherwise secured to the underside of one or both of the arms 31 and 32 is one or a pair of slightly sprung leaf springs 37 which are placed under load when the seat is fully closed by engaging the corresponding straps 21 and/or 22 so that the lid 10 tends to be sprung open, as shown in Fig. 5.

The special locking hinge 40 comprises a block 43 suitably secured to the seat 20 (as shown in Fig. 3) and having a height substantially equal to the thickness of seat back 30 so that, when closed, the upper surface of the block 43 will be flush with the top of the lid (as shown in Figs. 2, 7, and 9.) The block 43 carries a pair of buried hinge pins 44 parallel to the pin 2 upon which the arms 45 of the hinge plates 41 are pivotally mounted, the block 43 being suitably recessed to accommodate the pivoted ends of the arms 45 and the back 30 is slotted to accommodate the balance of the arms 45. Between the recesses for the arms 45, the block 43 is provided with an axially extending bearing slot 46 in which is journaled oppositely disposed L-shaped members, each comprised of a tang 47 and gripping trigger 48, the trigger portions 48 being accommodated in oversize rearwardly extending slots 49 to permit the ends of the triggers to protrude rearwardly of the block 43. A compression spring 50, accommodated in a slot 51, normally urges the triggers 48 away from each other and the tangs 47 into engagement with the hinge arms 45.

The inner surfaces of the hinge arms 45 are provided adjacent their pivoted ends with relatively deep keeper slots 52 into which the ends of the tangs 47 will project when the lid halves are tightly closed together, thus locking the members 20 and 30 tightly together to form the lid 10. At a slightly obtuse angle to the keeper slots are the relatively shallow, slightly curved, detent recesses 53 into which the tangs 47 will be projected when the seat back 30 is raised. Thus, when the child's seat is closed, it can only be opened by reaching to the rear of the seat and pressing the triggers 48 together to withdraw the tangs 47 from the keeper slots 52. Due to the action of the spring or springs 37, when the tangs 47 are withdrawn from the keeper slots 52, the seat will be sprung to the slightly open position shown in Fig. 5 so that, upon release of the triggers 48, the tangs will not be in alignment with the keeper slots 52. To fully open the child's seat, the seat back 30 is lifted until it is swung slightly past vertical, whereupon the tangs 47 are projected into the detent recesses 53 to firmly, but not positively, latch the seat back in its raised position. To close the child's seat, a firm pull is exerted on the upper edge of the raised seat back, sufficient leverage being obtained to allow the shallow, curved detent recesses 53 to cam the tangs 47 together against the pressure of the spring 50, thus releasing the seat back 30 and allowing it to be swung forward and down to the closed position. When the seat cover is returned to the position shown in Fig. 5, firm pressure on the forward end of the seat back 30 will compress the spring 37 and, when the members 20 and 30 are tightly closed together, as shown in Fig. 2, the spring 50 will project the tangs 47 into the keeper slots 52, again locking the lid 10. From the foregoing, it should be apparent that the child's seat may be opened and closed by a series of operations requiring only one hand to perform and, due to the withdrawn and rearward position of the triggers 48, the lid 10 will not be opened accidentally when the lid is closed. The latching, but not locking, function of the recesses 53 is desirable in that, while the triggers 48 are accessible when the lid 10 is down and closed, when the child's seat is opened, the triggers are relatively inaccessible.

A necessary attachment for the prior art auxiliary seats when used for boys was the well-known urine deflector which was detachable in

order to permit such auxiliary seats to be collapsed; in practice such deflectors were usually nailed on by the users to prevent loss or misplacement. I have provided a urine deflector which automatically assumes an operative position when the child's seat is in use and, by cooperation with other members of the structure, is placed in a position which permits the seat to be collapsed without detaching the deflector. To provide such an automatic non-detachable deflector, the seat opening **25** extends forwardly to provide a deflector receiving slot **54** in which the deflector **55** is received so that the deflector may lie in the slot **54** and opening **25** when the child's toilet seat is closed. With the forward end of the deflector (in the collapsed position) curved and flush with the forward rim of the seat **20**, the deflector is pivoted on a transverse pivot pin **56** extending across the slot **54**, the distance from the most forward end of the deflector to the pivot pin **56** being equal or greater than the vertical distance from the pivot ot the safety bar **35** when the safety bar is vertical above the pivot pin as the child's seat is opened or collapsed, as shown in Fig. 3. As shown in Fig. 4, the lower or rearward end of the deflector is paddle-shaped, the paddle being received in the opening **25** when the seat is closed, in order that the center of gravity of the deflector will be located rearwardly of the pivot pin **56**. Thus, as shown in Fig. 5, the tendency of the deflector is to automatically assume the operative upright position shown in Fig. 1 as the seat is opened; as the seat is closed, however, the closed safety bar **35** strikes the top of the deflector and cams it to the horizontal inoperative position shown in Fig. 4. The inner or upper face of the deflector is provided with a wide trough **57** to catch and guide urine into the toilet bowl when the deflector is in the operative upright position. The deflector is also provided with a transverse groove **58** corresponding to the recess **26** to accommodate the safety bar **35** when the child's seat is collapsed. To prevent the seat **20** from being weakened by the slot **54**, a short arcuate plate **59**, secured to the underside of the seat **20**, may extend across the forward end of the slot, as shown in Figs. 1 and 4, and the deflector may be provided with a suitable recess **59'** to accommodate said plate.

The usual cloth or leather safety strap employed to hold a child in the conventional auxiliary seat would be relatively ineffective in automatically operating the deflector **55** and is further objectionable because of the unsatisfactory buckle which is usually employed; the conventional buckle is usually easily detached both by the mother and the child. In my device, I preferably employ a safety lock **60**, which is possible in my device because of the rigid safety bar **35**. As shown in greater detail in Figs. 10 to 14, the lock **60** comprises a cap **61** secured in the bar **35**. Within the cap **61** is slidably and rotatably received the bolt **62** which is also journaled in the bar **35** below the socket **63** in the upper portion of which the cap **61** is received. As shown in Fig. 14, the bolt **62** comprises an upper cup portion **64** and an integral plate portion **65** below the cup portion and a pin portion **66** below the plate portion. As shown in Figs. **11** and **14**, the plate portion has a width equal to the diameter of the cup or piston **64**, a thickness equal to pin **66**, and a height preferably about equal to the thickness of the arm **31**. With the end of the safety bar provided with a slot **67** to receive the end of the arm **31**, the socket **63** extends below the slot **67** and the cap **61** extends down to the slot **67**. A compression and torsion spring **68** is received in the cap **61** and cup **64**, one end of the spring being held in a socket in the upper end of the cap and the other end of the spring extending through a hole in the cup **64** into an opening **69** cut in a quadrant of the body of the cap **61**. The lower end of the spring, therefore, limits the rotational movement of the bolt **62** in the cap **61** to one-quarter of a turn. The height of the cap **61** permits the bottom of the cup **64** to be raised above the slot **67**. The spring **68** normally projects the bolt **62** so that the cup **64** extends into the slot **68** and the plate **65** bears against the bottom of the socket **63**, as shown in Fig. 11. With the cap **61**, bolt **62**, and spring **68** assembled as shown in Fig. 11, a knurled knob **70** is pinned to the end of the pin **66**.

The end of the arm **31** is provided with a keeper recess for the safety lock **60** comprised of a hole portion **71** having a diameter slightly larger than the diameter of the cup **64** and a slot **72** having a width slightly greater than the diameter of the pin **66** and the thickness of the plate **65**. The forward end of the slot **72** diverges outwardly and the forward end of the arm **31** is oblique to the length of the arm, thereby providing the camming portion **73**, as shown in Fig. 13. The upper surface of the camming portion **73** is also beveled, as shown in Fig. 11.

With the spring **68** normally holding the bolt **62** so that the plate **65** is transverse to the slot **72**, as shown in Fig. 10, the lock **60** is opened by simultaneously or in sequence pressing upwardly on the knob **70** to raise the bottom of the cup above the slot **67** and turning the bolt **62** so that the plate **65** will pass through the slot **72** to permit the safety bar **35** to be swung outwardly. To close the safety bar from an open position, the bolt **62** may be manipulated or the bar **35** may be swung closed until the plate **65** strikes the camming portion **73** which turns the bolt and, due to the bevel, simultaneously lifts the cup **64** so that the plate **65** turns to enter the slot **72** and the cup **64** rides on the upper surface of the arm **31** until it drops into the hole **71**, when the plate **65** returns to its transverse position under the influence of the spring **68**. Experience has shown that, while the manipulation of the bolt **62** is convenient for an adult, it requires such cooperation that an infant is incapable of mastering it. The location of the knob **70** below the safety bar **35** and forwardly of the strap **21** also renders the knob relatively inaccessible to a child on the seat.

It is to be understood that the foregoing disclosure is the disclosure of the preferred embodiment of my invention. This invention is not limited to the preferred embodiment disclosed, either in whole or in part, but may be modified by those skilled in the art within the scope of the following claims. It is to be further understood that subcombinations herein disclosed, such as the automatic urine deflector or the safety bar and lock, may be used advantageously in the prior art auxiliary seats as well as in the present seat which is substantially permanently secured to the toilet bowl.

What is claimed is:

1. In a toilet seat assembly, two substantially congruent mating halves, a hinge joining said halves and permitting said halves to swing from a closed position in which said halves are super-

imposed to an open position in which said halves are approximately perpendicular to each other, a pair of linkages carried by said halves and raised to form a pair of arm supports when said halves are opened and collapsed between said halves when said halves are closed, the lower of said halves having a toilet opening between said linkages, a movable obstruction mounted on one of said linkages, and manually releasable means to lock said obstruction to the other of said linkages, and biasing means in said locking means to require both rotational and axial linear movement of said locking means to release said locking means.

2. In a toilet seat for infants, a seat portion having an opening therethrough, a back portion, a hinge joining said back portion to said seat portion, a pivot having an axis extending across said opening, a deflector mounted on said pivot so that the center of gravity of said deflector is spaced rearwardly from said pivot axis and said opening being configured to permit said deflector to swing from a horizontal position to a vertical position when said seat portion is horizontal, arms pivotally mounted with respect to said back portion and said seat portion on axes parallel to said hinge, a restraining member pivoted on one of said arms, and means to lock the free swinging end of said restraining member to the other of said arms, the length of said deflector opposite its center of gravity with respect to said pivot being greater than the distance from said pivot to said restraining member when said back portion is hinged with respect to said seat portion so that said restraining member is vertically above said pivot when said seat member is horizontal.

3. In an infant's toilet seat, a seat portion, a back portion, a hinge joining said seat portion and said back portion comprising a pivot fixed to one of said portions, a link fixed to the other of said portions and mounted on said pivot, said link having a deep locking recess and a shallow detent recess, a spring pressed, manually retractable tang, and means to guide said tang into either one of said recesses as said link is moved on said pivot as said portions are hinged with respect to each other.

4. In an infant's toilet seat, a pair of arms, a restraining safety bar pivotally mounted on one of said arms and means carried by the swinging end of said safety bar to lock said end to the other of said arms, said locking means comprising a keeper having an opening with a restricted entrance, a slidable and rotatable bolt receivable in said opening, said bolt having a first portion with a minimum dimension greater than the width of said entrance and a second portion with a minimum dimension less than the width of said entrance and a maximum dimension greater than the width of said entrance, and biasing means to project said first portion into said opening and to turn said second portion so that said maximum dimension of the second portion is normally transverse to said entrance when said first portion is projected into said keeper opening.

5. In a toilet seat assembly, a seat member having an opening therethrough, a lid member comprised of a seat portion having an opening smaller than the opening in said seat member, a back portion, a hinge joining said back portion to said seat portion, manually operable locking means carried by said hinge, a spring urging

said locking means into locking position when said back portion is moved into a closed position in engagement with said seat portion and into a latching detent position when said back portion is raised with respect to said seat portion, whereby manual operation of said locking means is required to release said locking means when said locking means is in the locking position but said locking means is released by application of sufficient torque on said back portion when said locking means is in the latching position, arm members carried by said back and seat portion, means to support said arm members when said back portion is raised with respect to said seat portion, and to collapse said arm members in planes transverse to said hinge when said back portion is closed with respect to said seat portion, a restraining safety bar pivoted to one of said arm members and a second locking means carried by said safety bar to lock said bar to the other of said arm members, a pivot parallel to said hinge and extending transversely of said opening in said seat member, a deflector mounted on said pivot so that its center of gravity is spaced from the axis of said pivot in the direction of said hinge and said deflector tends to assume a vertical position when said pivot is horizontal, said opening in said seat member being configured to permit said deflector to move from a horizontal to vertical position, said safety bar, deflector, and pivot being proportioned and located with respect to each other so that, when said safety bar is locked and said back portion is moved from a fully raised position to a closed position, said safety bar will strike said deflector and move said deflector from a vertical to a horizontal position, and a second hinge joining said lid member and said seat member and positioning said lid member with respect to said seat member so that, when said seat member and said seat portion are horizontal and said back member is raised to permit said deflector to pivot on said pivot, said deflector will extend into the opening in said seat member.

6. In a toilet seat for infants, a seat portion having an opening therethrough and a slot opening into said opening, a deflector receivable in said slot, a pivot carrying said deflector, the axis of said pivot extending transversely of said slot, biasing means tending to move said deflector to a vertical position when said seat portion is horizontal, a lid portion hinged to said seat portion and movable between an open position and a closed position, a pair of arms hingedly mounted on said lid and hinge portions, a restraining member extending between said arms, said restraining member being positioned on said arms to provide a path of movement to intersect the pivotal path of movement of said deflector, whereby, when said seat and lid are moved to their closed position, said restraining member engages and pivots said deflector into said slot and, when said seat and lid are moved to their open position, said deflector may be pivoted out of said slot.

7. In a toilet seat for infants, a seat portion having an opening therethrough and a slot extending forwardly of said opening, a pivot having an axis extending transversely of said slot, a deflector mounted on said pivot so that the effective center of gravity of the deflector is spaced rearwardly from the axis of the pivot, a lid portion hinged to said seat portion and

movable between an open position and a closed position, a pair of arms hingedly mounted on said lid and hinge portions, a restraining member extending between said arms, said restraining member being positioned on said arms to provide a path of movement to intersect the pivotal path of movement of said deflector, whereby, when said seat and lid are moved to their closed position, said restraining member engages and pivots said deflector into said slot and, when said seat and lid are moved to their open position, said deflector may be pivoted out of said slot.

ROBERT HUGHES.

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