

May 13, 1941.

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2,241,967

TOILET SEAT

Original Filed Nov. 15, 1937

2 Sheets-Sheet 1

Fig. 1.

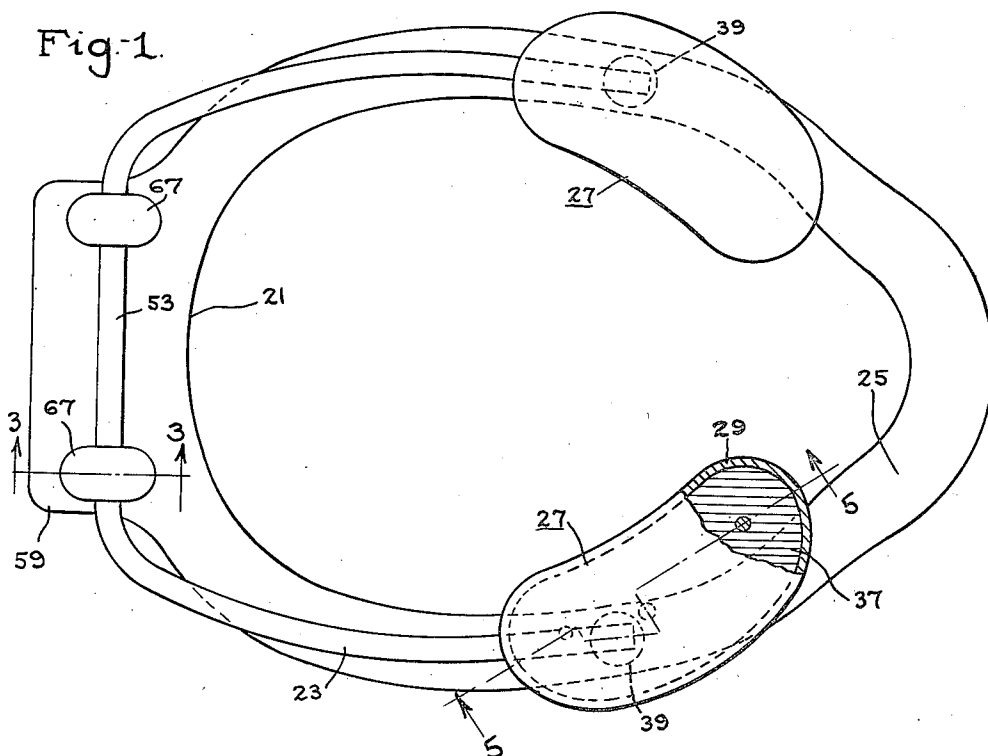


Fig. 2

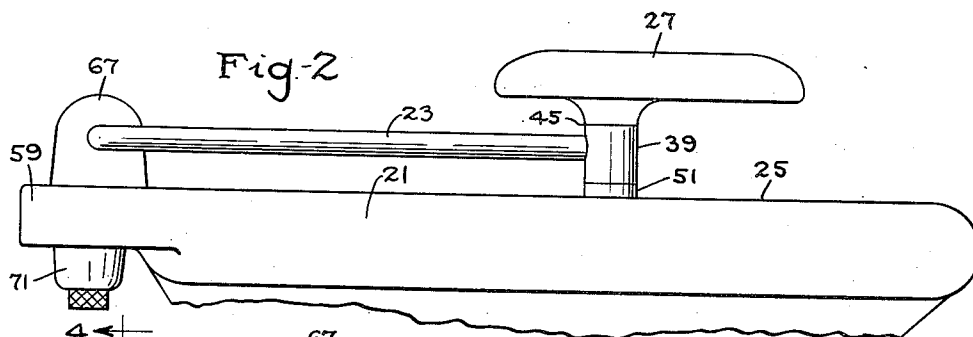
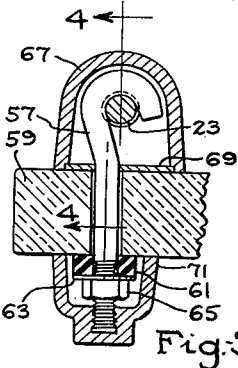


Fig. 3

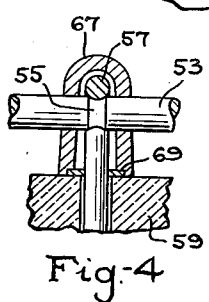


Fig. 4

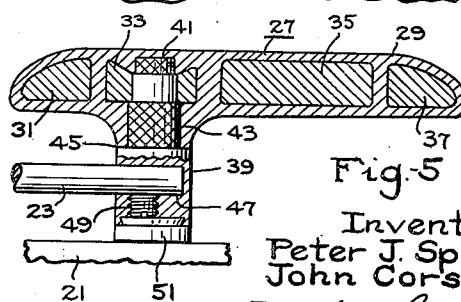


Fig. 5

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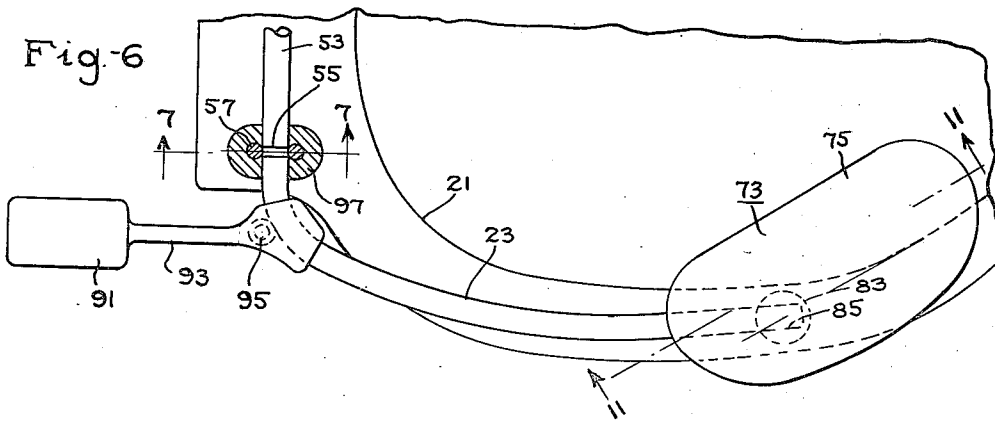
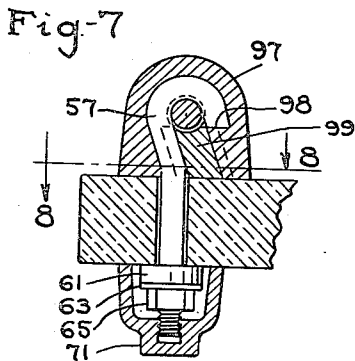
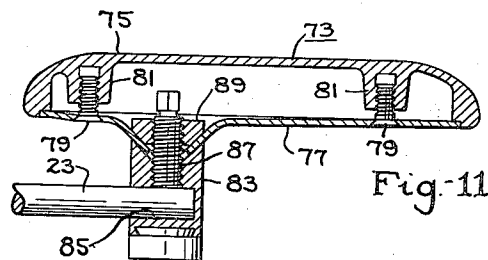
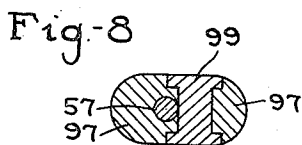
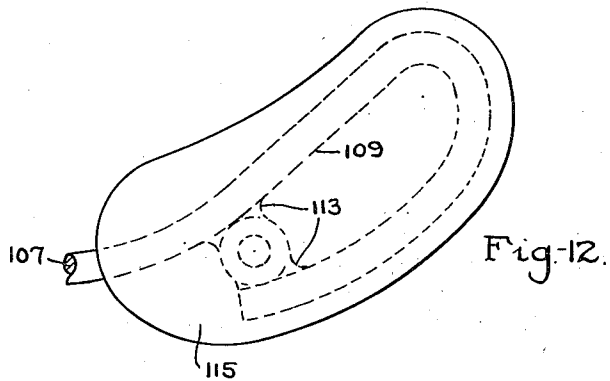
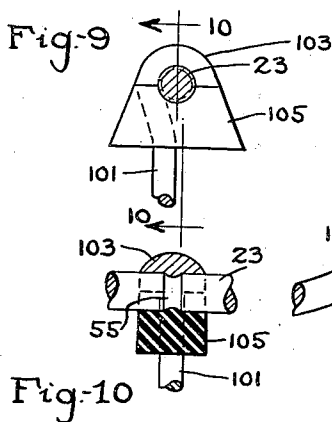
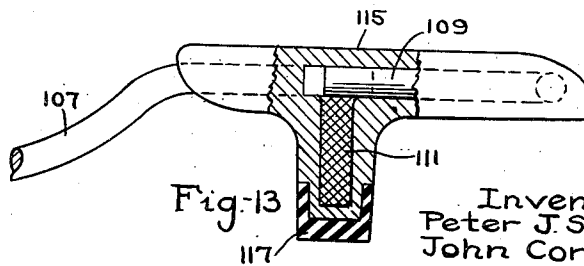
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Original Filed Nov. 15, 1937

2 Sheets-Sheet 2



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UNITED STATES PATENT OFFICE

2,241,967

TOILET SEAT

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Application November 15, 1937, Serial No. 174,576
Renewed September 21, 1939

15 Claims. (Cl. 4-237)

Our invention relates to toilet seats.

An object of our invention is to provide a toilet seat having only a small number of parts, each part of the simplest possible construction and form and of small size to reduce the weight thereof.

Another object of our invention is to provide a toilet seat that shall be so designed and constructed as to permit it to be easily maintained in a highly sanitary or hospital-clean condition.

Another object of our invention is to provide a toilet seat in which all surfaces shall be smooth and polished and free from abrupt changes in contour and in which the entire surface area shall be small to reduce to as great a degree as possible the tendency of extraneous matter to lodge thereon.

A particular object of our invention is to provide an improved toilet seat hinge structure for mounting a toilet seat on a toilet bowl.

Other objects of our invention will either be apparent from a description of several forms of toilet seats embodying our invention or will be pointed out hereinafter in the course of such description and set forth in the appended claims.

In the drawings—

Figure 1 is a top plan view of our improved toilet seat shown as mounted on a toilet bowl, a part of one of the seat pads being broken away,

Fig. 2 is a view in side elevation thereof, only the top portion of the bowl being shown,

Fig. 3 is a sectional view of a hinge structure taken on the line 3-3 of Fig. 1,

Fig. 4 is a fragmentary sectional view thereof taken on the line 4-4 of Fig. 3,

Fig. 5 is a sectional view on an enlarged scale, of a seat pad and a support therebelow, taken on the line 5-5 of Fig. 1,

Fig. 6 is a partial top plan view of a modified form of toilet seat shown as mounted on a toilet bowl,

Fig. 7 is a vertical sectional view through a hinge structure taken on the line 7-7 of Fig. 6,

Fig. 8 is a horizontal sectional view there-through taken on the line 8-8 of Fig. 7,

Fig. 9 is a fragmentary view in end elevation of another type of hinge,

Fig. 10 is a vertical sectional view taken on the line 10-10 of Fig. 9,

Fig. 11 is a vertical sectional view, on a slightly enlarged scale, taken on the line 11-11 of Fig. 6,

Fig. 12 is a fragmentary top plan view of a still further modification of a seat pad, and,

Fig. 13 is a view thereof partly in side elevation and partly in section.

Referring first to the toilet seat shown in Figs. 1 to 5 inclusive, we have illustrated an ordinary toilet bowl 21 on which our improved seat is to be mounted. The seat includes a yoke 23 which is of substantially U-shape and of such dimensions that the various parts operatively associated therewith will be positioned in the desired positions relatively to the top edge 25 of a toilet bowl. We prefer to make the yoke of a metal, of circular shape in cross section, in order to obtain the least surface area for a given strength as well as to obtain the most favorable contour thereof to shed extraneous matter.

Two separate and distinct seat pads 27, each of relatively small area, are provided, each pad being of substantially kidney-shape in top surface contour, having downwardly rounded edges, substantially as shown in Figs. 2 and 5 of the drawings. Each seat pad may comprise an external shell 29 of molded composition material having light-weight inserts 31, 33, 35 and 37 therein, preferably of wood or some other light weight material, in order to combine light weight with relatively great strength. The surface of each pad is smooth and highly polished and the edges are rounded as shown particularly in Fig. 2.

A rod-like support 39, of metal, has its upper end in interfitting engagement with the upper layer of molded material. The upper end of the rod is of reduced diameter and is preferably knurled as shown at 41 in Fig. 5 of the drawings, while a slightly reduced intermediate portion 43 is also knurled so that both the top and the bottom layer of molded composition material will have good interfitting engagement with the rod-like support. We wish to point out that the annular joint 45 between the lower part of the rod, of full diameter, and a part of the bottom layer of molded material is smooth, tight and even to prevent entrance of extraneous matter into the joint.

An end portion of the yoke 23 extends into an opening 47 in rod 39, but as shown in Fig. 5 it does not extend therethrough. It is desirable that the fit of an end portion of the yoke into the rod be relatively close in order to prevent entrance of foreign matter between the yoke end and the rod. Means for securing the rod on the end of the yoke may comprise a small headless set screw 49 which, as shown in Fig. 5, extends upwardly against an end portion of yoke 23 in an opening in rod 39 which opening is not co-axial with rod 39. This is desirable because of the fact that, while rod 39 interfits with the seat pad proper within the contour of a seat pad, the

rod 39 is not located centrally longitudinally of a pad but slightly to the rear of the center of the pad as will be seen from Figs. 1, 2 and 5 of the drawings. Each seat pad is therefore mounted on an end portion of the yoke in adjustable relationship in one plane.

A resilient bumper 51 has annular interfitting snap engagement with the bottom end of a rod 39 and it will be noted that the joint between bumper 51, which may be made of a suitable grade of rubber, and the bottom end of rod 39 is tight, smooth and even.

The metal yoke has a substantially straight intermediate portion 53 which is provided with two spaced annular grooves 55, shown more particularly in Fig. 4 of the drawings. A pair of hinge structures cooperate with the intermediate portion 53 of the yoke at the annular grooves to provide a pivotal mounting of the seat on a toilet bowl. Each structure includes a hookbolt 57 which is preferably of the shape shown in Fig. 3 of the drawings, that is the hook portion thereof extends at a small angle relatively to the axis of the main portion thereof. Each hookbolt directly engages the yoke in the respective grooves 55 and is made long enough so that it may extend downwardly through the rear flange portion 59 of a toilet bowl and therebelow, a resilient washer 61, a thin metal washer 63 and a nut 65 being mounted thereon in order to secure the hinge structures on a toilet bowl. We may use a covered coil spring in place of the resilient washer 61. It is evident that the yoke is securely held against movement laterally of the toilet bowl by the interfit of the hook bolts and the grooves 55.

A hood-like cover 67 which may be of rubber or of molded material having openings in each side wall, through which the intermediate part 53 of the yoke may extend, as shown in Fig. 4. A thin washer or plate 69 may have interfitting engagement with both the hookbolt 57 and the bottom edge of cover 67 in order to maintain the cover and the hookbolt in substantially fixed positions relatively to each other, after the device has been mounted on a toilet bowl. A lower cover 71 may also be provided to enclose the lower end portion of each hookbolt, and as shown in Fig. 3 of the drawings, this cover may be of such construction and shape that it will have screw-threaded engagement with the extreme lower end of hookbolt 57, whereby the upper edge of the cover can be forced into tight surface engagement with the under surface of the flange 59.

Referring now to Figs. 6, 7, 8 and 11, we have there illustrated a modified form of toilet seat using substantially the same general form of metal yoke 23, of substantially U-shape, as was used in the form of toilet seat shown in Figs. 1 to 5 inclusive. Seat pads 73 are secured to the respective end portions of yoke 23 and include a top plate 75 which may be made of molded composition material having a smooth and highly polished upper surface, with rounded edges, the under surface thereof being hollow, as shown in Fig. 11 of the drawings. A bottom plate 77, preferably of rust-resisting metal has interfitting engagement, in a countersunk manner, with the peripheral edge of the top portion 75 and the two parts 75 and 77 may be held in tightly assembled relation by several short machine screws 79 extending through the bottom plate and into lugs 81 forming a part of the top portion 75.

Rod-like supports 83, one for each seat pad, 75

are provided with a lateral opening 85 to receive an end portion of yoke 23 and a stud 87 extends into the upper end of rod 83 in screw-threaded engagement therewith, the stud 87 being tightened against the end portion of yoke 23 extending into support 83. A nut 89 is mounted on the upper end of stud 87 and fits against the upper surface of the downwardly dished plate 77 whereby to tightly clamp the plate 77 between the upper end of rod-like support 83 and the nut 89. It will be noted that a single means, namely the stud 87, is effective not only to hold the rod-like support 83 on an end portion of yoke 23 in adjustable relationship in one plane, but that the same stud cooperating with the nut 89 effects mounting of the bottom plate 77 and of the top part 75 on an end portion of the yoke 23 in adjustable relationship in another plane. In order to obtain this result the upper end of rod-like support 83 is made of conical shape substantially as shown in Fig. 11, while the bottom surface of nut 89 is made of conical shape, the nut being otherwise suitably shaped to permit of tightening it on stud 87.

As it may be desirable in many cases, to ensure that a toilet seat of this kind be normally raised well above the top edge of a toilet bowl, that is when not in use, we may provide a counterweight 91 having an arm 93 integral therewith, the outer end of arm 93 being so shaped as to fit over a part of yoke 23, a small plate, complementary to the outer end of arm 93 being provided together with a bolt 95 to clamp the two parts tightly on the yoke. Any other suitable or desired method of securing a weight to the yoke in such position as to cause the seat pads to be normally moved well above the upper edge of a toilet bowl may be employed by us.

A pair of covered hinge structures cooperate directly with the intermediate portion of yoke 23 to pivotably mount the seat on a toilet bowl. Each hinge structure includes a hookbolt 57 of the kind hereinbefore described, the hooked portion directly engaging with the intermediate portion of the yoke in a groove 55.

An enclosing cover 97 surrounds the upper portion of the hookbolt and a small portion of the intermediate part of yoke 23, a shoulder 98 in the cover being engaged by the end portion of the hook bolt. The yoke extends through cover 97 in substantially the same manner as was hereinbefore explained for cover 67. An insert 99, also of molded material, may have interfitting engagement with cover 97, which is made hollow for this purpose, it being desirable to ensure that there be no pockets either on the outside or on the inside of any part of the seat, where extraneous fluid or solid matter might lodge. A bottom cover 71 may also be provided as was done in the device shown in Figs. 1 to 5 inclusive. A hinge structure of this kind will not bind the yoke when the adjustment of nut 65 on the lower end of hook bolt 57 is only moderately tight. In such case the yoke may swing relatively freely and a small counter-weight 91 can be employed to raise the seat pads away from the toilet bowl. On the other hand, it is obvious that a tighter adjustment of nut 65 will cause the hook bolt to engage the yoke with considerable pressure, and thus the ease of swinging movement may be limited where desired.

In Figs. 9 and 10 we have illustrated a modified and simplified form of hinge including a hookbolt 101 which, while it is in general of the same shape as hookbolt 57 is provided with an

upper laterally extended portion 103, shown particularly in Fig. 10 of the drawings so that the groove 55 in yoke 23 may have adequate protection as well as to provide a greater bearing surface between the hookbolt 101 and yoke 23. A block 105 of suitable resilient material, such as rubber, may be used below the yoke 23 and rest upon the top surface of a rear flange 59 of a toilet bowl to obtain a substantially enclosed hinge structure.

Referring now to Figs. 12 and 13 we have there illustrated a still further modification of a seat pad in which a yoke 107, the main portions of which are substantially the same as shown in Fig. 1 of the drawings, has its end portions 109 return bent as shown in Fig. 12 of the drawings, these return bent end portions being positioned in a plane parallel to but spaced from the plane of the other parts of the yoke, as is shown particularly in Fig. 13 of the drawings.

A rod-like support 111, preferably of metal, extends below the return bent end portion 109 and, as shown in Fig. 12 of the drawings, the upper end of rod 111 may be welded to both portions of the return bent end, as shown at 113 in Fig. 12. A layer 115 of molded composition material is then placed in position around the end portions and the rod-like support 111, and here again it may be noted that the outer surface of member 115 is smooth, highly polished, with an entirely unbroken surface and with rounded edges. A resilient bumper 117 may be provided, having interfitting engagement with that part of outer layer 115 surrounding rod-like member 111, and here again the joint between the bumper 117 and the molded composition material is smooth, tight and even.

It is obvious that the seat pad raising means comprising particularly weight 93 can be applied equally well to the toilet seat shown in Figs. 1 to 5 inclusive, as well as to the form shown in Figs. 12 and 13. The entirely covered hinge structures shown in Figs. 3, 4 and Figs. 8, 9 respectively are of course also interchangeable.

We wish to point out that the device embodying our invention is particularly useful in public or semi-public rest rooms where devices of this kind are subject to much abuse, but where it is highly desirable that a highly sanitary or a hospital-clean condition can be easily and quickly effected at frequent intervals. The seat pads themselves are of a construction providing smooth and highly polished exterior surfaces which are substantially unbroken. The interior of each of the seat pads described above is hollow or of skeleton type, insofar as the molded composition material is concerned. We have found that a non-metallic material lends itself to the accomplishment of the objects stated hereinbefore, namely to provide a light weight toilet seat having relatively great strength, in which all of the parts have the simplest shape and construction, in which all joints are tight, smooth and even, and in which all materials are such as to withstand the various extraneous fluid and solid materials to which they will be subjected in use with the least possible damage. A device of the kind shown in the drawings, in any of the various forms there shown can be easily maintained in a highly sanitary and hospital-clean condition.

It may also be pointed out that the top surface area of the seat pads is very small, the length being about $6\frac{1}{2}$ " and the width about $3\frac{3}{4}$ ", whereby the contaminatable surface area is greatly reduced. The rod-like supports have a

diameter on the order of one inch and are of such length as to raise the pads about two inches above the upper edge of a toilet bowl. These dimensions are not to be considered as limiting in any sense, but merely as illustrative of the dimensions which we may use.

The subject-matter claimed in the present case primarily involves the hinge structure. The construction of the seat pads in the various modifications shown and described, and the manner of securing the same to the yoke are claimed in application Serial No. 296,216, filed September 23, 1939, which is a continuation-in-part of the present application.

We claim as our invention:

1. A toilet seat for resting on a toilet bowl and including a yoke of substantially U-shape, a pair of separate seat pads, of generally kidney shape, of molded composition material having a smooth and substantially unbroken outer surface secured to the ends of the yoke, hook bolts directly engaging the intermediate part of the yoke for pivotally securing the seat on a toilet bowl and non-metallic covers for the hinge structure and adjacent parts of the yoke holdable against the top and bottom surfaces of a toilet bowl by parts of the hinge structure and cooperating with the bowl to completely enclose the entire hinge structure in a substantially fluid-tight manner, all surfaces and surface joints being of such material and construction as to easily effect a hospital-clean condition of the toilet seat.

2. A toilet seat for mounting on a toilet bowl and comprising two separate seat pads, of substantially kidney-shape in contour and of relatively small surface area, a yoke of substantially U-shape and of circular cross section having end portions connecting with the seat pads and positioning the seat pads above the rim slightly forward of the center of the bowl, the intermediate portion of the yoke having a pair of spaced annular grooves therein, a pair of hookbolts fitting into the respective grooves to constitute hinges for the seat and to prevent lateral shifting of the yoke relatively to the hookbolts and covers for the upper ends of the respective hookbolts closely surrounding and engaging the upper ends of the hookbolts.

3. A toilet seat for mounting on a toilet bowl and comprising two separate opposed seat pads having non-metallic top surfaces of relatively small area and length compared to the bowl, supports beneath the pads effective when resting on the upper edge of a toilet bowl to raise the pads above the upper edge of the toilet bowl, a yoke of substantially U-shape having its end portions connected to said seat pads to position them slightly forward of the center of a bowl, said yoke having a pair of annular grooves in the intermediate portion thereof, hookbolts having interfitting engagement with the yoke in the grooves and arranged to be secured to a toilet bowl and non-metallic covers for the hookbolts cooperating with the toilet bowl to completely enclose said bolts and the grooved portions of the yoke.

4. A device constituting the main support of a person using a toilet bowl and including a pair of separate kidney-shaped seat pads of molded composition material with rounded external edges, a support beneath each pad, a U-shaped yoke having its ends connecting with the respective seat pads, a hinge structure on the intermediate portion of the yoke having the yoke itself as a part thereof for pivotally mount-

ing the device on a toilet bowl and non-metallic covers over the upper and the lower ends of the hinge structure interfitted with the intermediate part of the yoke and pressable tightly against the top and the bottom surfaces of a toilet bowl by portions of the hinge structure, the surfaces and contours of all parts of the device being such as to prevent extraneous fluid and solid matter engaging said hinge structure.

5. A toilet seat for mounting on a toilet bowl comprising a substantially U-shaped yoke, a relatively flat mass of molded composition material secured to each arm portion of the yoke and having a spacer therebelow for engaging the top edge of a toilet bowl, and at least one hinge comprising an anchor member adapted to be secured to a toilet bowl engaging the intermediate portion of said yoke between the arm portions, said anchor member and yoke portion having male and female interfitted bearing surfaces providing for relative turning movement but preventing relative movement axially of the intermediate portion of the yoke, and combined means for supporting the intermediate yoke portion in spaced relation to a toilet bowl and encasing the interfitted connection of the yoke and anchoring member.

6. A toilet seat for mounting on a toilet bowl comprising two separate opposing seat pads of relatively small surface area and length compared to the bowl, a metal yoke of substantially U-shape having a straight intermediate portion, and having opposing forwardly extending arms adapted to support the seat pads over the rim of the bowl somewhat forward of the center of the bowl, a pair of hollow supporting members mounted in spaced relation on the straight intermediate portion of the yoke, and a pair of spaced hinge members adapted to be mounted at the rear of the toilet bowl, said hinge members pivotally engaging the straight portion of the U-shaped yoke intermediate the arms interiorly of the hollow supporting members, interfitted bearing connections between the hinge member and yoke encased by the supporting members locking the hinge members in fixed position axially of the yoke so as to prevent lateral shifting of the seat pads and yoke member relative to the rim of the toilet bowl.

7. A hinge device for securing toilet seat means to a toilet bowl comprising a rod member adapted to be secured to the toilet seat means, a pair of spaced anchoring bolts adapted to be secured to the toilet bowl, open hook portions at the upper end of said bolts embracing the upper portion of the rod member to secure the rod member to the toilet bowl for pivotal movement, said anchoring bolt hook portions making locking bearing engagement with an intermediate portion of the rod member so as to secure the bolts in fixed spaced relation and prevent, independently of any connection of the rod member with a toilet seat means, axial sliding movement of the rod member relative to the bolts, and combined means for supporting the rod member in spaced relation to the toilet bowl and encasing the rod-engaging upper portions of the anchoring bolts comprising cap members each having an upwardly extending recess bolts housing the hook portion of one of the bolts and the portion of the rod member in locking bearing engagement therewith, said cap members having an intersecting lateral bore intermediate the upper and lower ends of the recess receiving and pivotally supporting the intermediate portion of

the rod member in spaced relation to the toilet bowl.

8. A hinge device for toilet seats comprising a hinge rod adapted to be secured to a toilet seat member, an anchoring bolt adapted to be secured to a toilet bowl having an open securing hook at its upper end extending over the rod, an annular grooved bearing in the rod receiving said bolt hook, and a hollow supporting cap member pivotally mounted on the hinge rod encasing the bolt hook and holding the same on the hinge rod independently of connection of the anchoring bolt with a toilet bowl.

9. A hinge device for toilet seats comprising a hinge rod adapted to be secured to a toilet seat member, an anchoring bolt adapted to be secured to a toilet bowl having an open securing hook at its upper end extending over the rod, an annular grooved bearing in the rod receiving said bolt hook, a hollow supporting cap member pivotally mounted on the hinge rod independently of the bolt and encasing the upper end of the bolt hook, and means for holding the cap member against lateral movement relative to the bolt.

10. A hinge device for toilet seats comprising a hinge rod adapted to be secured to a toilet seat member, an anchoring bolt adapted to be secured to a toilet bowl having an open securing hook at its upper end extending over the rod, an annular grooved bearing in the rod receiving said bolt hook, a hollow supporting cap member pivotally mounted on the hinge rod independently of the bolt and encasing the bolt hook, and means for centering the bolt in the cap member.

11. A hinge device for toilet seats comprising a hinge rod adapted to be secured to a toilet seat member, an anchoring bolt adapted to be secured to a toilet bowl having an open securing hook at its upper end extending over the rod, an annular grooved bearing in the rod receiving said bolt hook, a hollow supporting cap member pivotally mounted on the hinge rod independently of the bolt and encasing the bolt hook, and a washer plate having interfitted engagement with both the bolt and cap member for maintaining the bolt and cap member in substantially fixed positions relative to each other.

12. A hinge device for toilet seats comprising a hinge rod adapted to be secured to a toilet seat member, a hollow supporting cap member pivotal on the rod, an anchoring bolt adapted to be secured to a toilet bowl extending upwardly through the hollow interior of the cap member in spaced relation to the wall thereof and having an open hook portion at its upper end engageable with the upper portion of the rod and operative through such connection with the rod to secure both the rod and cap to a toilet bowl, and means independent of connection of the anchoring bolt with a toilet bowl for securing the bolt against lateral movement relative to both the cap member and hinge rod.

13. A hinge device for toilet seats comprising a hinge rod adapted to be secured to a toilet seat member, a hollow supporting cap member pivotal on the rod, an anchoring bolt adapted to be secured to a toilet bowl extending upwardly through the hollow interior of the cap member in spaced relation to the wall thereof and having an open hook portion at its upper end engageable with the upper portion of the rod and operative through such connection with the rod to secure both the rod and cap to a toilet bowl, and means engageable with the bolt for securing

the cap member and hinge rod against lateral movement relative to each other.

14. A hinge device for toilet seats comprising a hinge rod adapted to be secured to a toilet seat member, a hollow supporting cap member pivotal on the rod, an anchoring bolt adapted to be secured to a toilet bowl extending upwardly through the hollow interior of the cap member in spaced relation to the wall thereof and having an open hook portion at its upper end engage-
10 able with the upper portion of the rod and operative through such connection with the rod to secure both the rod and cap to a toilet bowl, and means for securing the hinge rod, cap member and anchoring bolt against lateral move-
15 ment relative each to the other.

15. A device constituting the main support of a person using a toilet bowl and comprising a pair of separate seat pads of kidney-shape in

outline, of molded composition material having a smooth and unbroken outer surface, a metal yoke of substantially U-shape, the ends of which support the seat pads, a hinge structure for pivotally mounting the device on a toilet bowl including a hook bolt directly engaging the intermediate portion of the yoke in interlocking bearing relation and adapted to prevent axial movement of the yoke relative to the hook bolt, and a cover for the hinge structure molded on the hook bolt and interfitting with the yoke, and being pressable by the hook bolt against the top surface of the toilet bowl when the device is mounted thereon, the surfaces and contours of the entire device being such as to minimize lodgement thereon of extraneous fluid and solid material.

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