July 19, 1966 H. BENEKE, JR 3,261,029

TOILET SEAT AND COVER ASSEMBLY

Filed Sept. 17, 1963 2 Sheets-Sheet 1

Fig. 1.

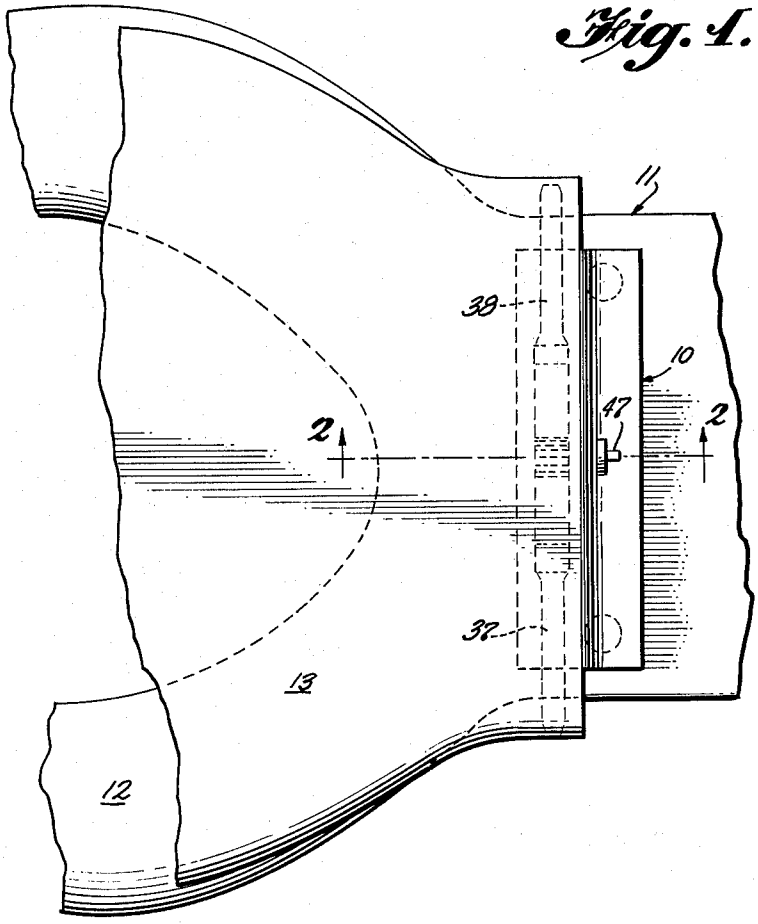
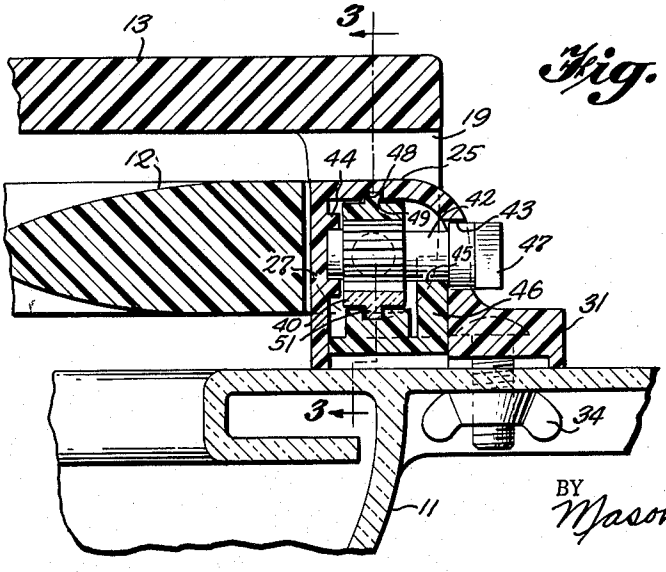


Fig. 2.



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Fig. 3.

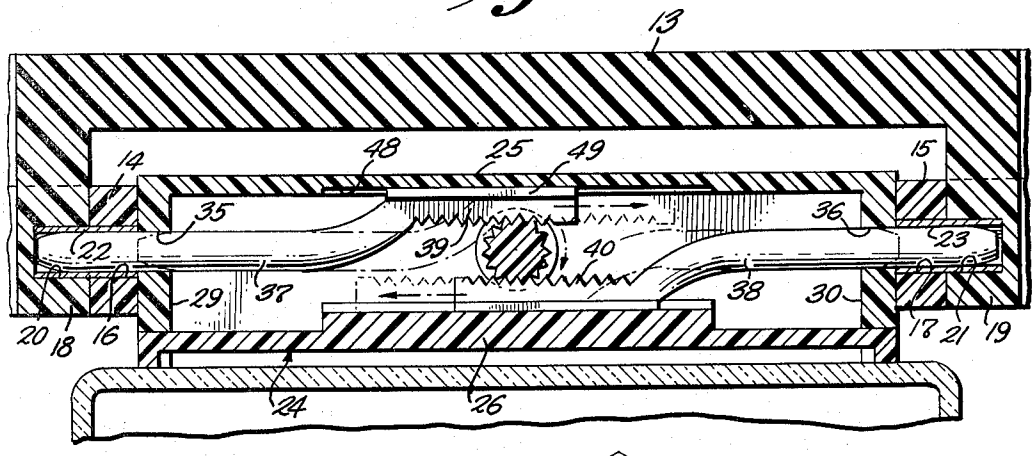
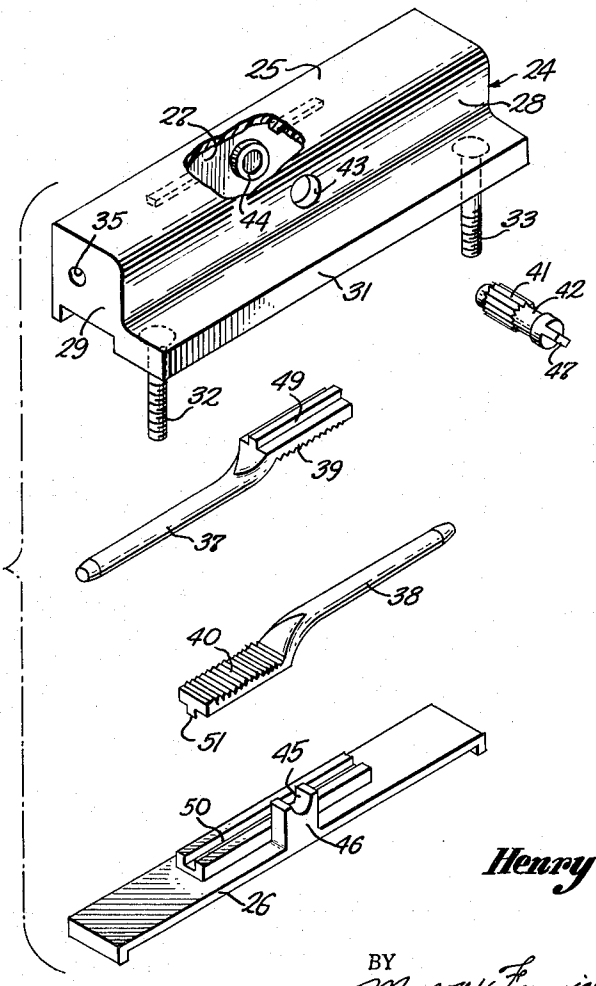


Fig. 4.



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United States Patent Office 3,261,029 Patented July 19, 1966

3,261,029

TOILET SEAT AND COVER ASSEMBLY

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Filed Sept. 17, 1963, Ser. No. 309,573
15 Claims. (Cl. 4—236)

This invention relates to toilet seat constructions and more particularly to a seat and cover assembly for a toilet bowl. This invention also contemplates a hinge pin assembly suitable for mounting seat and cover members on toilet bowls.

Generally, a conventional toilet seat and cover assemblies comprise a seat member and a cover member which are hingedly mounted on fixtures rigidly secured to the toilet bowl so that they may be swung either together or separately in a vertical plane into an opened or closed position. Usually, it is desirable to be able to remove such members from such fixtures to facilitate cleaning the same and the underlying portions of the toilet bowl. In the prior art, there are various types of seat and cover assemblies which are adapted to be mounted and dismounted on toilet bowls. However, many of such assemblies are complicated in construction, having a considerable number of parts, and usually require a relatively difficult or awkward mounting or dismounting operation.

Accordingly, it is the principal object of this invention to provide an improved seat and cover assembly for toilet bowls.

Another object of this invention is to provide an improved seat and cover assembly for toilet bowls which may be readily assembled or disassembled.

A further object of this invention is to provide an improved seat and cover assembly for a toilet bowl which can be readily mounted or dismounted from the toilet bowl without the use of any tools.

A still further object of this invention is to provide an improved seat and cover assembly for a toilet bowl which can be readily mounted or dismounted from the toilet bowl having easily accessible means for withdrawing the hinge pins upon which the seat and cover members are mounted.

Another object of the present invention is to provide an improved seat and cover assembly for a toilet bowl having seat and cover members which can be removed from the toilet bowl as a unit to facilitate cleaning of the same and underlying portions of the toilet bowl.

A further object of this invention is to provide a seat and cover assembly for a toilet bowl which has relatively few parts and is relatively inexpensive to manufacture.

A still further object of this invetnion is to provide an improved hinge pin assembly for toilet seat and cover assemblies which is operable to withdraw the hinge pins upon which the seat and cover member are mounted so that such members can be removed from the toilet bowl.

Other objects and advantages of the present invention will become apparent to those skilled in the art, from the folowing description when read in conjunction with the accompanying drawings, in which:

FIGURE 1 is a top plan view of an embodiment of the invention, having portions thereof broken away;

FIGURE 2 is a cross-sectional view taken along line 2—2 of FIGURE 1;

FIGURE 3 is a cross-sectional view taken along line 3—3 of FIGURE 2; and

FIGURE 4 is an exploded view of the hinge pin assembly as disclosed in FIGURES 1 through 3.

In accordance with the broad aspects of the present invention there is provided a seat and cover assembly suitable for use with a toilet bowl generally comprising

a hinge pin assembly adapted to be mounted on the toilet bowl having a seat member and a cover member hingedly mounted thereon so that they may be swung in a vertical plane into an opened or closed position in the conventional manner. The hinge pin assembly is provided with a pair of laterally extending, retractable pin members upon which the seat and cover members are mounted. Rotatable means is provided within the hinge pin assembly having a portion thereof operatively engageable with the hinge pin members so that upon rotation of the rotatable means the hinge pin members may be extended or retracted for mounting or dismounting the seat and cover members.

Referring to FIGURE 1 of the drawing, there is shown an embodiment of the present invention generally comprising a hinge pin assembly **10** mounted on a toilet bowl **11**, and a seat member **12** and a cover member **13** which are hingedly mounted on the hinge pin assembly **10**. As best shown in FIGURES 1 and 3, the seat member **12** is provided with a pair of rearwardly extending, spaced ear or hinge portions **14** and **15** having aligned openings **16** and **17**, respectively. The rearward end of the cover member **13** is provided with downwardly extending, spaced ear or hinge portions **18** and **19** having aligned openings **20** and **21**, respectively. As illustrated in FIGURE 3, the ear portions **18** and **19** are spaced a sufficient distance apart so that they abut the outside surfaces of the rearwardly extending ear portions **14** and **15** of the seat member, respectively. It also will be noted that the openings in the ear portions of the seat and cover members are aligned to receive sleeve members **22** and **23**. The sleeve members **22** and **23** are disposed in the aligned openings of the ear portions so that the seat and cover members are pinned together as a unit, which provides for the seat and cover members to be pivoted relative to each other.

The hinge pin assembly **10** comprises a housing member **24** having a top wall **25**, a removable bottom wall **26**, a front wall **27**, a rear wall **28** and end walls **29** and **30**. As best shown in FIGURE 3, the length of the housing **24** is slightly less than the distance between the ear portions **14** and **15** of the seat member, so that the inner surfaces of the ear portions **14** and **15** are disposed adjacent the end walls **29** and **30** of the housing member.

The housing member **24** is provided with a rearwardly extending flange portion **31** having a pair of downwardly extending threaded fasteners **32** and **33** which are received in suitable openings in the rearward portion of the toilet bowl so that the housing member **24** may be rigidly secured to the toilet bowl by means of wing nuts **34**.

The end walls **29** and **30** of the housing member are provided with a pair of aligned openings **35** and **36** which are adapted to be registered with the aligned openings in the ear portions of the seat and cover members. Disposed within the housing in alignment with the openings **35** and **36** are axially movable pin members **37** and **38**. The movable pin members **37** and **38** are provided with radially offset gear rack portions **39** and **40** which mesh with a gear portion **41** of a rotatable shaft member **42** having an axis disposed perpendicular to the axis of the pin members.

As best shown in FIGURE 2, the shaft member **42** extends through an opening **43** in the rear wall **28** of the housing member having the front end thereof received in an annular flange portion **44** disposed on the inner surface of the front wall **27** of the housing member. The intermediate portion of the shaft member **42** is supported on a bearing surface **45** formed on the upper end of a post member **46** disposed on the bottom wall **26** of the housing member. The exterior end of the shaft member **42** is provided with a diametrically disposed lip portion **47** which may be rotated to impart rectilinear motion to the gear rack portion of the pin members for extending and

retracting the pin members into and out of the registered sleeve members 22 and 23 disposed in the openings of the ear portions of the seat and cover members.

The pin members 37 and 38 are prevented from lateral movement relative to their line of travel by means of an elongated guide groove 48 provided in the top wall 25 of the housing member disposed parallel to the line of travel of the pin member 37 which is adapted to receive an elongated lip portion 49 of the pin member 37, and an elongated guide groove 50 disposed in the bottom wall 26 of the housing member, disposed parallel to the line of travel of the pin member 38 which is adapted to receive an elongated lip portion 51 of the pin member 38.

To assemble and mount the hinge pin assembly on the toilet bowl, the hinge pin member 37 is first inserted into the housing member through the bottom opening provided when the bottom wall 26 is removed so that the elongated lip portion 49 thereof is received within the elongated guide groove 48 provided in the top wall of the housing. The shaft member 42 then is inserted into the housing member through the opening 43 in the rear wall 28 so that the front end thereof is received within the annular portion 44 formed on the front wall of the housing member and the gear portion 41 of the shaft member is in mesh with the gear rack portion 39 of the pin member 37. Next, the pin member 38 is inserted into the housing member through the bottom opening and positioned so that the gear rack portion 40 thereof is in mesh with the gear portion 41 of the shaft member. The bottom wall 26 is then inserted through the opening of the housing member so that the guide groove portion 50 thereof receives the elongated lip portion 51 of the gear rack portion of pin member 38, and the upper bearing surface of the post member 46 thereof engages the shaft 42.

With the components of the hinge pin assembly thus assembled, the assembly is mounted on the rearward portion of the toilet bowl 11 with the threaded fasteners 32 and 33 extending through suitable openings provided therein. The assembly is rigidly secured to the toilet bowl by means of wing nuts 34. After the hinge pin assembly has been rigidly mounted on the toilet bowl the shaft member 42 is rotated by means of the lip portion 47 to retract the pin members within the housing. The seat and cover members joined together by means of sleeve members 22 and 23 may then be mounted on the hinge pin assembly by registering the openings of the sleeve members 22 and 23 with the openings 35 and 36 of the housing member and rotating the shaft member 42 by means of the lip portion 47 to extend the pin members into the openings of the sleeve members. The seat and cover members are thus securely mounted on the pin members 37 and 38 and are free to be swung either as a unit or separately in the open or closed position.

When it is desired to remove the seat and cover members to facilitate cleaning of the members and underlying portions of the toilet bowl, all that need be done is to rotate the shaft member 42 so that the pin members 37 and 38 are retracted clear of the spaced ear portions 14 and 15 of the seat member. The seat and cover members are then free to be removed as a unit.

It will be appreciated that all of the operating components of the hinge pin assembly are enclosed within the housing 24, to prevent dirt and other foreign matter from accumulating thereon. The only component of the hinge pin assembly which is exposed is the lip portion 47 of the shaft member which is easily accessible from above to extend or retract the pin members 37 and 38, as desired.

The components of the entire assembly may be constructed of any suitable material although it is preferred that the components of the hinge pin assembly be constructed of plastic with the exception of the threaded fasteners 32 and 33 and the wing nuts 34 which can be constructed of conventional metal materials. It also is preferred that the components of the hinge pin assembly be fabricated by casting with the threaded fasteners cast in place, although any suitable method may be used for fabricating such components and securing the threaded fasteners to the flange portion 31 of the housing member.

From the foregoing detailed description it will be evident that there are a number of changes, adaptations and modifications of the present invention which come within the province of those skilled in the art. However, it is intended that all such variations not departing from the spirit of the invention, be considered as within the scope thereof as limited solely by the appended claims.

What I claim is:

1. A seat and cover assembly for a toilet bowl comprising a support means, said support means having means for securing the same to said toilet bowl, at least one movable pin member mounted on said support means, a seat member having at least one ear portion with an opening therein, a cover member having at least one ear portion with an opening therein registrable in alignment with the opening in the ear portion of said seat member and rotary means mounted on said support means and operatively engageable with said pin member for selectively extending and retracting said pin member into and out of the openings in the ear portions of said seat and cover members when said openings are disposed in alignment with said pin member and adjacent said support means.

2. A seat and cover assembly for a toilet bowl comprising a support means, said support means having means for securing the same to said toilet bowl, first and second movable pin members disposed in alignment and mounted on said support means, a seat member having a pair of spaced ears with aligned openings, a cover member having a pair of spaced ears with openings registrable in alignment with the openings in the ears of said seat member and rotary means mounted on said support means and operatively engageable with said pin members for selectively extending and retracting said pin members into and out of the openings in the ear portions of said seat and cover members when said openings are registered in alignment with said pin members and adjacent said support means.

3. A seat and cover assembly for a toilet bowl comprising a housing member, said housing member having means for securing the same to said toilet bowl, a pair of movable pin members disposed in alignment and mounted in said housing member, said housing member having openings aligned with said pin members, a seat member having a pair of spaced ears with aligned openings registrable with said pin members, a cover member having a pair of spaced ears with openings registrable in alignment with said pin members, said pin members each having a gear rack portion and a rotatable shaft having a gear portion meshing with the rack gear portions of said members journaled in said housing member.

4. A seat and cover assembly for a toilet bowl comprising a housing member, said member having means for securing the same to said toilet bowl, a pair of movable pin members disposed in alignment and mounted in said housing, said housing having openings aligned with each of said pin members, a seat member having a pair of spaced ears with aligned openings registrable for alignment with said pin members, a cover member having ears with openings registrable in alignment with said pin members, rotary means journaled in said housing and operatively engageable with said pin members for selectively extending and refracting said pin members through said openings in said housing member into and out of the openings in said ears when said openings are registered in alignment with said pin members and guide means disposed in said housing means for guiding said pin members.

5. A seat and cover assembly for a toilet bowl comprising a housing member, said housing member having means for securing the same to said toilet bowl, a pair of movable pin members disposed in alignment and mounted in said housing member, said housing member having openings aligned with said pin members, a seat member having a pair of spaced ear portions with aligned openings registrable in alignment with said pin members, a

cover member having a pair of spaced ear portions with openings registrable in alignment with said pin members, said pin members each having a gear rack portion, a rotatable shaft member journaled in said housing, said shaft member having a gear portion meshing with the gear rack portions of said pin members and guide means disposed in said housing member for guiding said pin members through said openings in said housing member into and out of said openings in the ear portions of said seat and cover members when the shaft member is rotated and said openings are registered in alignment with said pin members.

6. A seat and cover assembly for a toilet bowl comprising a seat member having a pair of spaced ears with aligned openings, a cover member having a pair of spaced ears, each of said ears of said cover members disposed adjacent an ear of said seat member and having an opening in alignment with the opening in the adjacent ear of said seat member, sleeve members disposed in aligned openings in adjacent ears, a support means disposed between said ears, a pair of pin members mounted on said support means, each aligned with the opening of one of said sleeve members, rotary means mounted on said support means and operatively engageable with said pin members for selectively extending and retracting said pin members into and out of said sleeve members and said support means having means for securing the same to said toilet bowl.

7. A seat and cover assembly for a toilet bowl comprising a seat member having a pair of spaced ears with aligned openings, a cover member having a pair of spaced ears with openings aligned with the openings in the ears of said seat member, a housing member disposed between said ears, said housing member having openings aligned with the opening in said ears, a pair of pin members mounted in said housing member in alignment with the openings in said ears, each of said pin members having a gear rack portion, a rotatable shaft member having a gear portion meshing with the rack gear portions of said pin members journaled in said housing member and said housing means having means for securing the same to said toilet bowl.

8. A seat and cover assembly for a toilet bowl comprising a seat member having a pair of spaced ears with aligned openings, a cover member having ears with openings aligned with the openings in the ears of said seat member, a housing member disposed between said ears of said seat and cover members, said housing member having openings aligned with the openings in the ears of said seat and cover members, a pair of pin members mounted in said housing in alignment with said openings in said ears, rotary means journaled in said housing and operatively engageable with said pin members for selectively extending and retracting said pin members through said openings in said housing member into and out of the openings in said ears, guide means disposed in said housing means for guiding said pin members and said housing member having means for securing the same to said toilet bowl.

9. A seat and cover assembly for a toilet bowl comprising a seat member having a pair of spaced ear portions with aligned openings, a cover member having a pair of spaced ear portions with openings aligned with the openings in the ear portions of said seat member, a housing member disposed between said ear portions, said housing having openings aligned with said openings in the ear portions of said seat and cover members, a pair of pin members mounted in said housing member in alignment with said openings in said ear portions, each of said pin members having a gear rack portion, a rotatable shaft member journaled in said housing, said shaft member having a gear portion meshing with the gear rack portions of said pin members, guide means disposed in said housing member for guiding said pin members through said openings in said housing member into and out of said openings in the ear portions of said seat and cover members when the shaft member is rotated and said openings are registered in alignment with said pin members and said housing member having means for securing the same to said toilet bowl.

10. A seat and cover assembly for a toilet bowl comprising a seat member having a pair of rearwardly extending, spaced ear portions with aligned openings, a cover member having a pair of depending, spaced ear portions with openings aligned with the openings in the ear portions of said seat member, each ear portion of said cover member disposed adjacent an ear portion of said seat member, a sleeve member disposed in the aligned openings of adjacent ear portions, an elongated housing member disposed between the ear portions of said seat and cover members, having a front wall, a rear wall, end walls, a bottom wall and a top wall, the end walls of said housing member having openings aligned with said sleeve members in the openings of said ear portions of said seat and cover members, a pair of hinge pin members disposed in said housing member in alignment with and receivable in said sleeve members, a rotatable shaft member journaled in the front and rear walls of said housing member and extending through an opening in the rear wall thereof, said shaft member having a gear portion disposed within said housing member, said pin members having rack gear portions meshing with said gear portion of said shaft member, the top and bottom walls of said housing member having elongated guide grooves extending along the line of travel of said pin members, said pin members each having an elongated lip portion received in a guide groove, the rear wall of said housing having a rearwardly extending flange and said flange having means for securing said housing member to said toilet bowl.

11. A hinge pin assembly for a toilet bowl having a seat and cover assembly wherein the seat and cover members thereof are provided with ear portions with aligned openings adapted to receive a hinge pin comprising a support means, at least one pin member mounted on said support means, rotary means mounted on said support means and operatively engageable with said pin member for selectively extending and retracting said pin member laterally relative to said support means so that said pin member may be received in aligned openings in the ear portions of said seat and cover members and said support means having means for securing the same to said toilet bowl.

12. A hinge pin assembly for a toilet bowl having a seat and cover assembly wherein the seat and cover members thereof are provided with spaced ear portions with aligned openings adapted to receive hinge pins comprising a support means, a pair of axially aligned pin members mounted on said support means, rotary means mounted on said support means and operatively engageable with said pin members for selectively extending and retracting said pin members relative to each other along their common axis and said support means having means for securing the same to said toilet bowl.

13. A hinge pin assembly for a toilet bowl having a seat and cover assembly wherein the seat and cover members thereof are provided with spaced ear portions with aligned openings adapted to receive hinge pins comprising a housing member, a pair of pin members mounted in said housing member disposed in axial alignment, said housing member having a pair of openings each axially aligned with a pin member, each of said members having a gear rack portion, a rotatable shaft journaled in said housing member, said shaft member having a gear portion meshing with said gear portions of said pin members so that when said shaft member is rotated said pin members will be extended and retracted relative to each other through said openings in said housing and said housing

member having means for securing the same to said toilet bowl.

14. A hinge pin assembly for a toilet bowl having a seat and cover assembly wherein the seat and cover members thereof are provided with spaced ear portions with aligned openings adapted to receive hinge pins comprising a housing member, a pair of pin members mounted in said housing member disposed in axial alignment, said housing member having a pair of openings each axially aligned with a pin member, a rotatable shaft journaled in said housing member, said shaft member having a gear portion meshing with said gear portions of said pin members so that when said shaft member is rotated said pin members will be extended and retracted relative to each other through said openings in said housing member, guide means disposed in said housing member for guiding said pin members along their axial line of travel and said housing member having means for securing the same to said toilet bowl.

15. A hinge pin assembly for a toilet bowl having a seat and cover assembly wherein the seat and cover members thereof are provided with spaced ear portions with aligned openings adapted to receive hinge pins comprising an elongated housing member having a front wall, a rear wall, end walls, a bottom wall and a top wall, a pair of pin members mounted in said housing member disposed in axial alignment, the end walls of said housing member each having an opening axially aligned with

a pin member, a rotatable shaft member journaled in the front and rear walls of said housing member and extending through an opening in the rear wall thereof, said shaft member having a gear portion disposed within said housing member, said pin members having rack gear portions meshing with said gear portion of said shaft member so that when said shaft member is rotated said pin members will be extended and retracted relative to each other through said openings in the end walls of said housing member, the top and bottom walls of said housing member having guide grooves extending parallel to the line of travel of said pin members, said pin members each having an elongated lip portion received in a guide groove, the rear wall of said housing having a flange and said flange having means for securing said housing member to said toilet bowl.

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