United States Patent

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[54] **ARM ASSEMBLY FOR WATER CLOSET SEAT**
10 Claims, 5 Drawing Figs.

[52] **U.S. Cl.** **4/254**
[51] **Int. Cl.** **E03d 11/00**
[50] **Field of Search** ..... 4/237, 254, 98, 217, 213, 240; 308/(N); 285/(Inquired); 287/(Inquired)

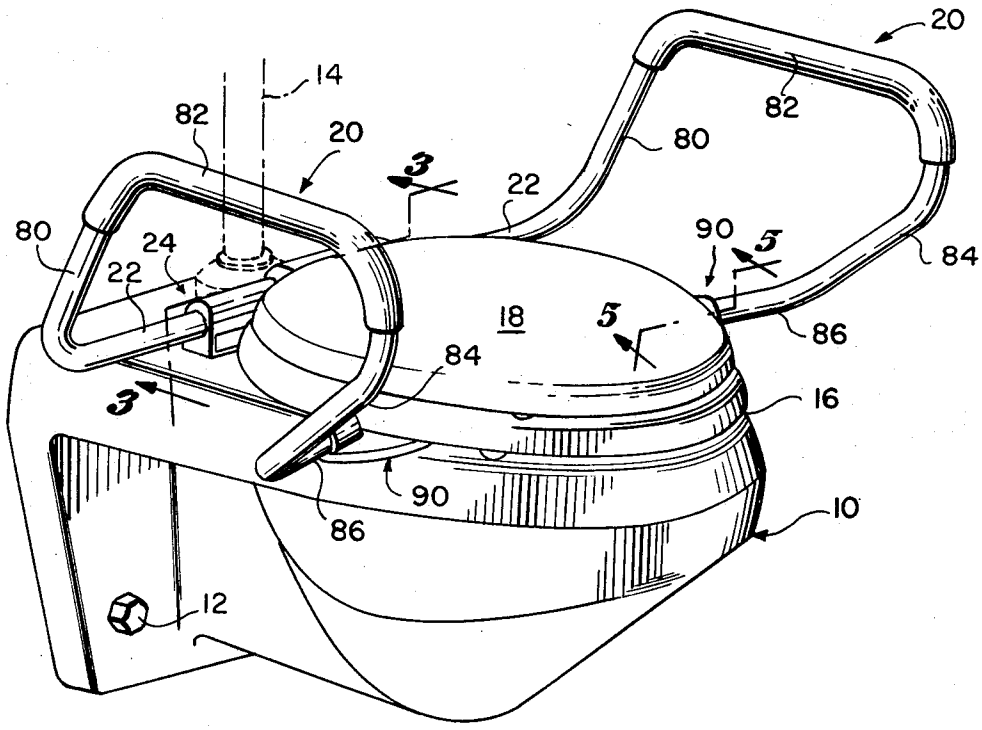
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ABSTRACT: A pair of arms is provided having one end thereof fixed to the underside of a water closet seat. The opposite ends of the arms are inturned and supported within spaced bearings mounted in a support bracket fixed to the bowl of the water closet. Retaining pin means is provided for holding the arms in place. A pair of inner bearings are provided, and each includes a portion which supports the inner end of the arm means for rotation with respect to the support bracket, this inner bearing means also including a portion which supports both the water closet seat and the cover thereof for swinging movement with respect to the support bracket.



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Fig. 1.

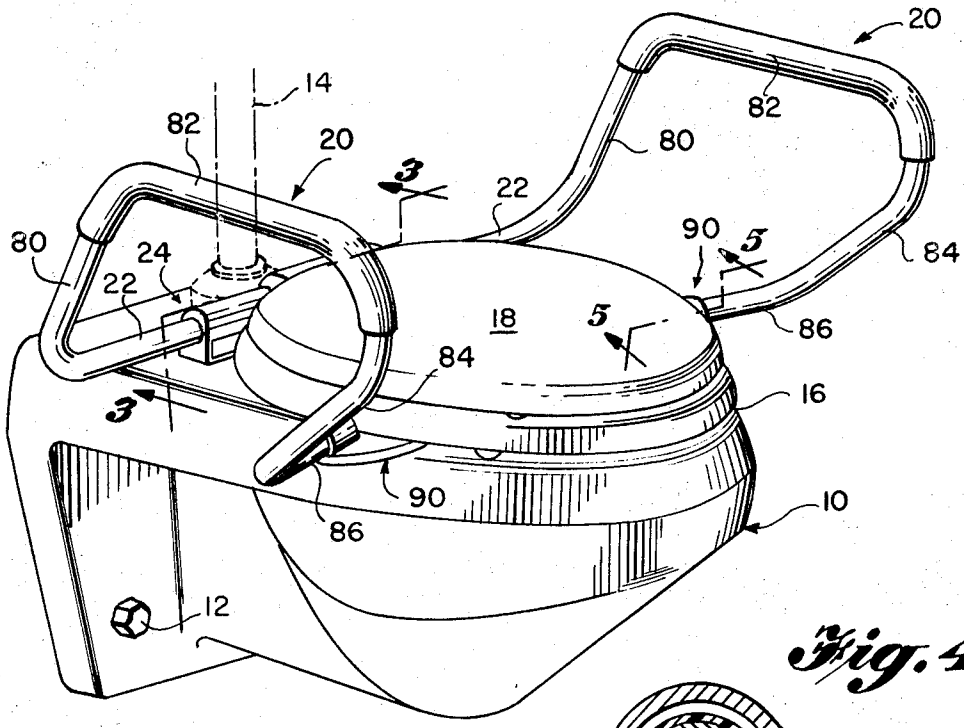


Fig. 4.

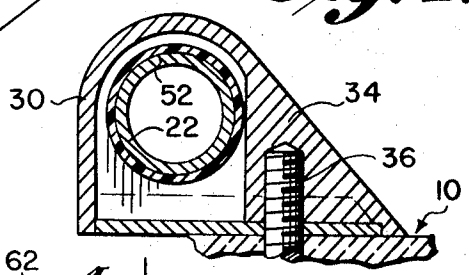
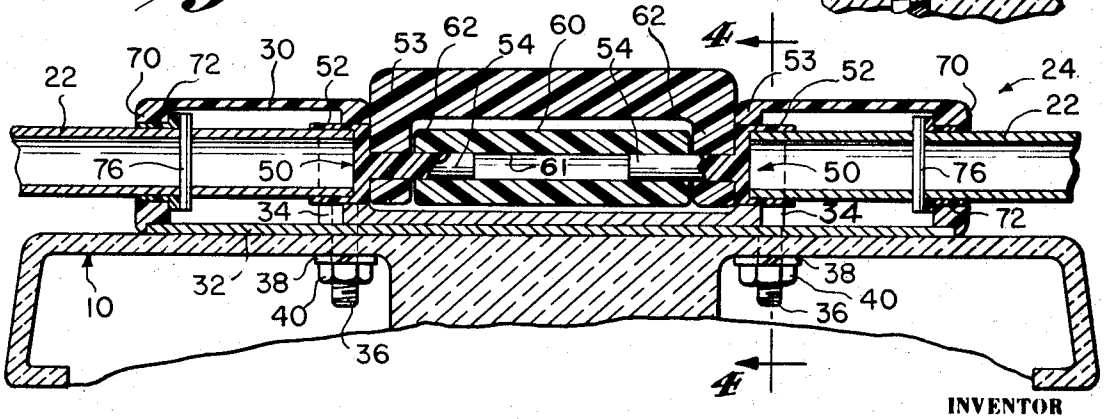


Fig. 3.



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Fig. 2.

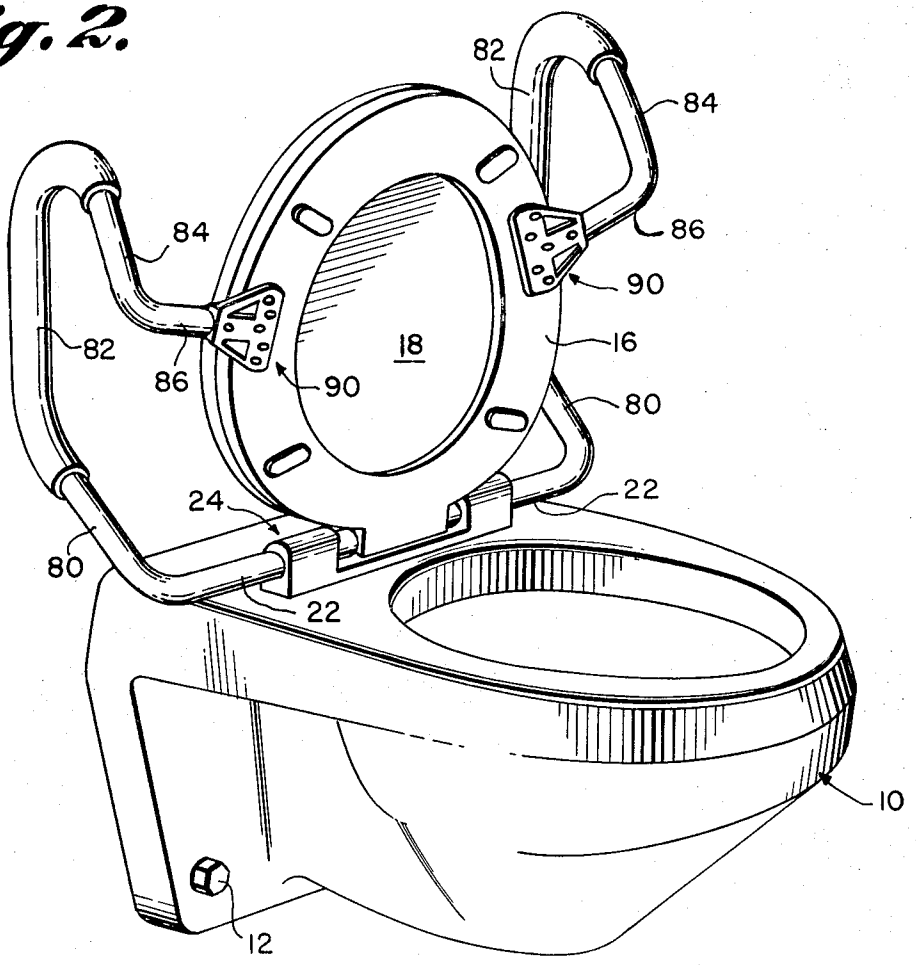
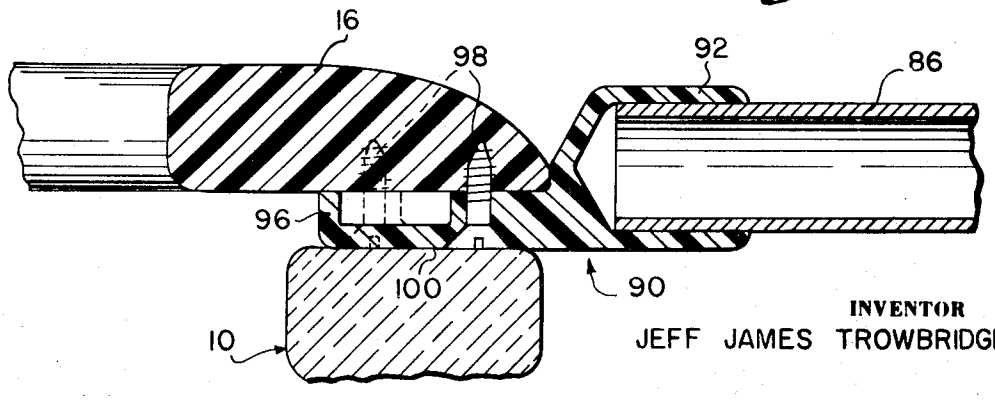


Fig. 5.



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ARM ASSEMBLY FOR WATER CLOSET SEAT

BACKGROUND OF THE INVENTION

The present invention relates to a water closet seat having arm means associated therewith for use by persons who for one reason or another are handicapped and accordingly require the use of their arms in order to lower themselves into position with respect to the water closet, to retain them in proper position on the water closet, and further to rise from the water closet.

The arrangement of the present invention represents an improvement over a construction such as shown in U.S. Pat. No. 3,405,411 wherein a similar arrangement is provided for the use of handicapped persons. In the construction as shown in the aforementioned patent, the hinge construction which includes a support bracket fixed to the water closet bowl and which rotatably supports the inturned ends of the arms is of relatively complex and expensive construction. In addition, this prior art arrangement is difficult to assemble and position the components in proper operative position as well as to disassemble.

The manner in which the various components are rotatably supported requires a relatively large number of parts and furthermore provides a construction wherein certain portions of the components are not rotatably journaled on bushings of antifriction material thereby resulting in excessive wear.

SUMMARY OF THE INVENTION

The present invention includes a support means in the form of a bracket fixedly secured to the water closet bowl. This support bracket includes a first pair of inner bearing means which have enlarged portions fitting about the terminal portions of the inturned ends of the two arms and which rotatably support these inturned ends of the two arms with respect to the support bracket.

These aforementioned first pair of inner bearing means also include reduced portions which extend axially away from the terminal ends of the two arms and upon which both the seat and the cover of the water closet are swingably mounted. These reduced ends of the two inner bearing means are spaced from one another.

With the aforementioned construction, the inner bearing means provide a very simple and effective means for both rotatably supporting the inturned ends of the two arms for rotation with respect to the support bracket as well as supporting the seat and cover for swinging movement with respect to the support bracket.

A further pair of bearings are supported by the support bracket, these further bearings each being disposed in spaced relationship to an associated inner bearing means, the further bearing means also supporting arms for rotation with respect to the support bracket.

By providing the two pairs of bearings as aforedescribed, each inturned end of an arm is mounted for rotation solely by bushings of antifriction material thereby substantially reducing wear on the arms. Furthermore, the inturned ends of the arms are supported at relatively widely spaced points to thereby securely support the two arms. The arms are retained in operative position by the simple expedient of providing an antifriction arrangement which at the same time positively prevents withdrawal of the inturned ends of the arms from the support bracket.

The opposite ends of the arms are interconnected with the underside of the associated seat by arm-connecting means which include tubular portions for receiving the associated end of the arms and which furthermore are fixed to the underside of the seat. These arm-connecting means include undersides which are adapted to rest upon the bowl of the water closet whereby any loads applied to the arms are transferred through the arm-connecting means to the bowl of the water closet.

The construction of the present invention may be readily assembled and disassembled as required, and furthermore the components may be easily properly centered and retained in proper position. The bearing means of the present invention is simpler and cheaper than that of the prior art and provides a better antifriction support for the arms of the apparatus.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. **1** is a top perspective view of the apparatus of the present invention in its lowered position;

FIG. **2** is a top perspective view similar to FIG. **1** illustrating the apparatus in its raised position;

FIG. **3** is a sectional view on an enlarged scale taken substantially along line **3–3** of FIG. **1** looking in the direction of the arrows;

FIG. **4** is a sectional view on an enlarged scale taken substantially along line **4–4** of FIG. **3** looking in the direction of the arrows; and

FIG. **5** is a sectional view on an enlarged scale taken substantially along line **5–5** of FIG. **1** looking in the direction of the arrows.

DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring now to the drawings wherein like reference characters designate corresponding parts throughout the several views, a water closet includes a bowl portion **10** which is secured by suitable fasteners **12** to a wall. Plumbing indicated by phantom line **14** is suitably interconnected with the water closet. A conventional seat **16** and cover **18** are provided, and a pair of arms **20** are disposed at opposite sides of the seat.

The arms **20** include inturned ends **22** adjacent the rear of the seat, the inturned ends of the arms being rotatably supported by a hinge assembly indicated generally by reference numeral **24** which also includes means for supporting the seat and cover for swinging movement with respect to the remaining components of the construction.

As seen most clearly in FIGS. **3** and **4**, the hinge assembly includes a support bracket **30** formed of a suitable metallic substance which rests upon a metallic stiffening plate **32** which in turn is supported on the upper surface of the fixed bowl **10**. The support bracket includes portions **34** having tapped holes there within which receive the upper ends of threaded studs **36**. These threaded studs extend through suitable aligned holes provided in plate **32** and bowl **10**. Washers **38** are disposed about the lower ends of studs **36** and nuts **40** are threaded thereon to rigidly attach the support bracket to the bowl.

A pair of inner bearings are indicated generally by reference numeral **50**, each of these inner bearings including an enlarged tubular portion **52** which fits snugly about the terminal ends of the inturned ends **22** of each of the arms. Each of the inner bearings **50** also includes an integral elongated substantially cylindrical portion **54** extending axially away from the end of the associated arm, these axially extending portions **54** being spaced from one another. Each of the inner bearings **50** is formed of a suitable antifriction material such as nylon or the like, the portions **52** of these inner bearings being supported within complementary holes formed in spaced inner walls **53** of the support bracket.

The seat includes a support portion **60** having an elongated passage **61** formed therethrough which is adapted to receive the bearing portions **54** in the opposite ends thereof whereby the seat is supported for swinging movement about the aligned axes of portions **54** so that the seat can swing with respect to the support bracket.

The cover includes a pair of spaced ears **62** extending therefrom, these ears having suitable holes formed therethrough which receive the bearing portions **54** whereby the seat is also supported for swinging movement about the axes of the bearing portions **54** so that the cover can swing with respect to the support bracket and independently of the seat. It will be noted that the inner walls **53** of the support bracket are spaced apart sufficiently to permit the seat and cover support portions to be disposed therebetween.

The support bracket includes a pair of outer walls **70** having circular holes formed therethrough receiving tubular bearings **72** in the form of bushings formed of antifriction material such as nylon or the like. These further bearings **72** also serve to support the inturned ends of the arms for rotation with respect to the support bracket.

Retaining means for holding the inturned ends of the arms in operative position comprises pins **76** which extend through diametrically opposite holes formed in the inturned ends of the tubular arms. These pins are so positioned as to be adjacent to and in engagement with the inner portions of bearings **72** whereby outward movement of the arms with respect to the support bracket is positively prevented.

When assembling the apparatus at the factory, the bushings **72** are first placed in operative position in the support bracket, and the inturned ends of the arms are inserted through these bearings. The terminal ends of the inturned ends of the arms are then inserted into the inner bearings **50** which are then pushed into the holes provided in portions **60** and **62** of the seat and cover respectively. The components are then properly centered and the holes drilled for pins **76** whereupon the pins are driven into operative position for holding the assembly in the position shown in FIG. **3**. The entire assembly can then be readily installed upon a water closet at a job site by the use of the studs **36** previously described.

Referring again to FIGS. **1** and **2**, each of the arms **20** includes an upwardly and forwardly extending portion **80** formed integral with the inturned ends **22**, portions **80** joining with forwardly extending substantially horizontal portions having arms rests **82** disposed thereabout. The horizontal portion of each arm in turn joins with a downwardly and rearwardly extending portion **84** which in turn joins with an inwardly extending portion **86**. Each of these arms is of tubular construction throughout and is formed of a metallic material.

As seen most clearly in FIG. **5**, the forward end **86** of each of said arms is interconnected with the underside of an adjacent portion of the seat by an arm-connecting means or bracket **90**. Each of these brackets is of identical construction and is formed of a suitable plastic material such as nylon or the like. The brackets are of one-piece construction and include a tubular portion **92** which is adapted to snugly receive the forward end of an associated arm. A setscrew **94** is adapted to be threaded into a threaded hole provided in the underside of the bracket for engaging and securing the arms in place.

Each arm bracket **90** includes a flattened portion **96** having suitable holes therein for receiving a plurality of screws **98** which are driven up into the underside of the plastic seat for rigidly securing the arm bracket to the seat whereby the forward ends of each of the arms are rigidly interconnected with the underside of the seat.

Each arm bracket **90** also includes a flat underside which is adapted to rest upon the upper surface of the associated portion of the bowl **10**. In this manner, any downward loads applied to the arms are transferred from the arms through the arm brackets **90** and thence downwardly to the fixed bowl of the water closet.

It is apparent that the arms are swingable along with the seat and may be swung from the lowered position shown in FIG. **1** to the raised position shown in FIG. **2**. The cover is independently swingable with respect to the seat and the arms and may be utilized in the usual manner.

As this invention may be embodied in several forms without departing from the spirit or essential characteristics thereof, the present embodiment is therefore illustrative and not restrictive, and since the scope of the invention is defined by the appended claims, all changes that fall within the metes and bounds of the claims or that form their functional as well as conjointly cooperative equivalents are therefore intended to be embraced by those claims.

I claim:

1. An arm assembly for water closet seats comprising a water closet seat, a water closet cover, arm means including an arm disposed at one side of said seat, one end of said arm being connected with the underside of said seat, the opposite end of said arm being inturned, support means for supporting the inturned end of said arm, and bearing means supported by said support means, a portion of said bearing means supporting said inturned end of the arm for rotation with respect to said support means, and another portion of said bearing means supporting both said seat and said cover for swinging movement with respect to said support means.

2. Apparatus as defined in claim **1** wherein said bearing means includes an enlarged portion fitting around the terminal portion of said inturned end of the arm.

3. Apparatus as defined in claim **2** wherein said bearing means is of one-piece construction and includes a portion of reduced dimension extending axially away from said terminal portion and supporting both said cover and said support means.

4. Apparatus as defined in claim **1** wherein there is an arm disposed at the opposite side of the seat, a second bearing means similar to said first bearing means being supported by said support means, said second bearing means including a portion supporting said inturned end of the arm for rotation with respect to said support means and also including another portion supporting both said seat and said cover for swinging movement with respect to said support means, said second bearing means being axially aligned with and spaced from said first bearing means.

5. Apparatus as defined in claim **1** including further bearing means supported by said support means and spaced from said first-mentioned bearing means, said further bearing means being supported by said support means and also rotatably supporting said inturned end of the arm for rotation with respect to said support means.

6. Apparatus as defined in claim **1** including retaining means for retaining the inturned end of said arm in operative position.

7. Apparatus as defined in claim **6** wherein said retaining means comprises a pin extending through hole means formed in the inturned end of said arm and is disposed in engagement with said bearing means.

8. Apparatus as defined in claim **7** including a further bearing means supported by said support means and spaced from said first-mentioned bearing means, said further bearing means also rotatably journaling the inturned end of said arm for rotation with respect to said support means, said pin being disposed adjacent said further bearing means.

9. Apparatus as defined in claim **1** including an arm-connecting means interconnected with said one end of the arm, said arm-connecting means including a portion fixed to the underside of said seat, said arm-connecting means including an underside adapted to rest on a fixed support.

10. Apparatus as defined in claim **9** wherein said arm-connecting means includes a tubular portion receiving said one end of the arm.