

Dec. 10, 1968

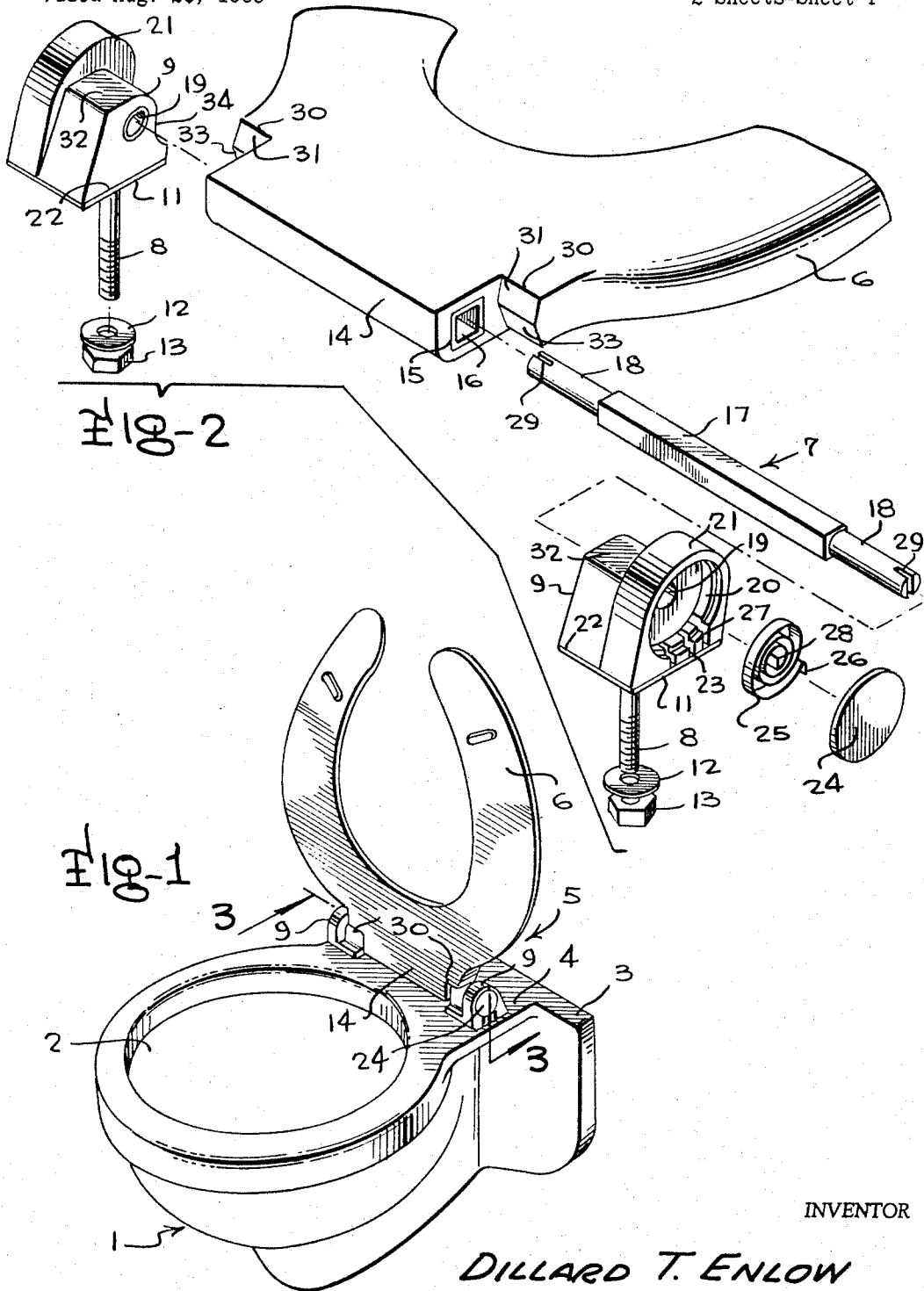
D. T. ENLOW

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SELF-RAISING WATER CLOSET SEAT

Filed Aug. 26, 1966

2 Sheets-Sheet 1



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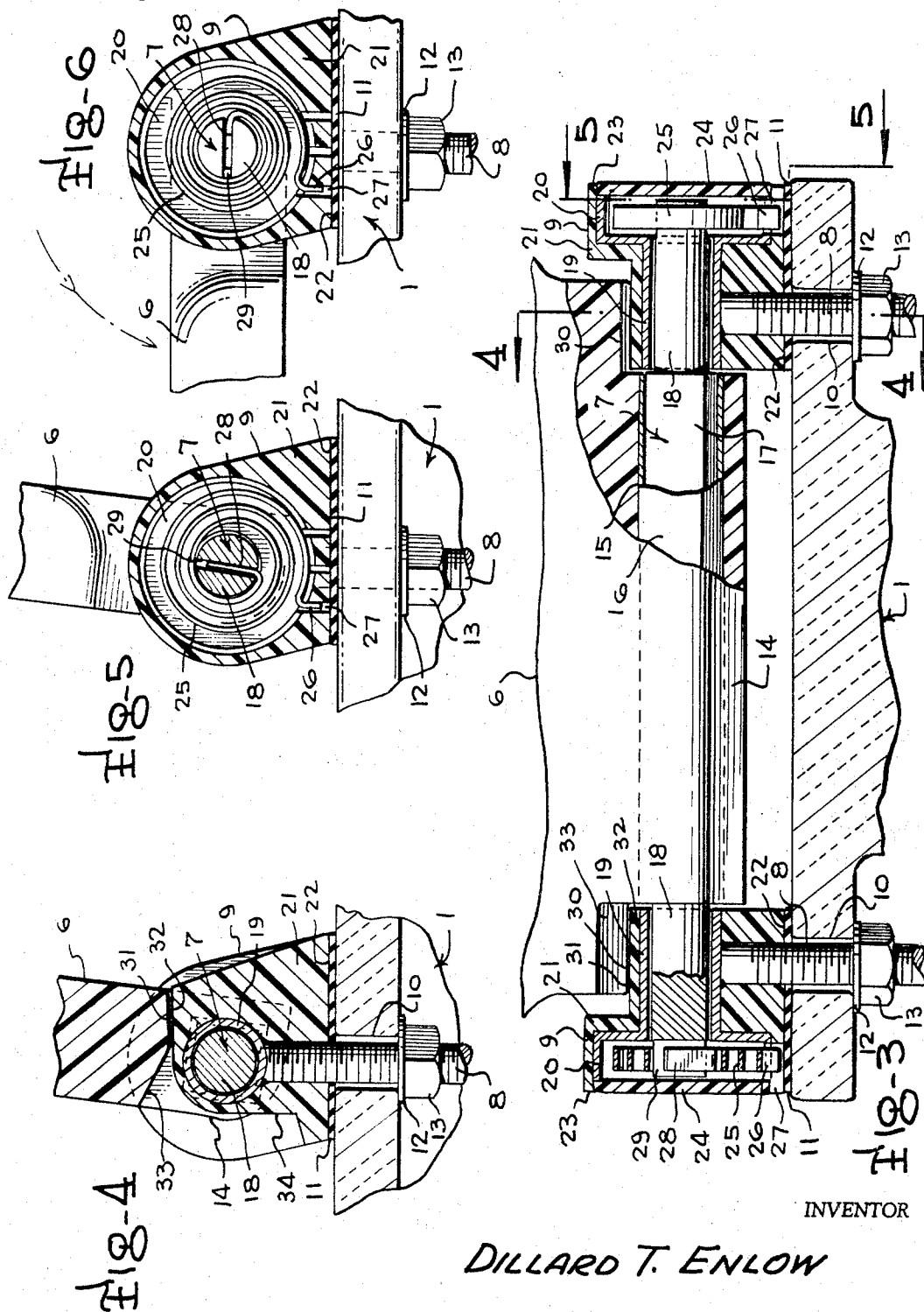
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SELF-RAISING WATER CLOSET SEAT
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Filed Aug. 26, 1966, Ser. No. 575,356
6 Claims. (Cl. 4—241)

This invention relates to water closet seats, and more particularly to water closet seats which are biased to raised position so that unless restrained they will occupy a raised position.

It has long been recognized that for purposes of sanitation water closet seats should be raised when not in use. In public toilets particularly, the need has long existed for a suitable self-raising seat for water closets.

Many attempts have been made to supply a seat of this general character, but these attempts have resulted in seats which are themselves unsanitary, and difficult to clean. This is due in part to the use of exposed springs, lever arms, etc. Where the springs, or other lifting means, have been enclosed, there has been great difficulty in attaining access to the lifting means when repair is necessary. The constructions have been complicated, with spring used to operate levers, and the levers, in turn, being used to operate the seat. Some of the prior constructions needed special shapes for the mounting ends of the seats, so that conventional configurations could not be used.

The general object of the present invention is to supply a self-raising seat for water closets which will be simple in construction and sanitary in use, for it can be easily cleaned, easily assembled, and easily disassembled.

A more specific object of the invention is the provision of a self-raising seat wherein all of the operating parts are housed in molded hinge blocks, mounted at the top of the usual mounting bolts.

Another object is to provide a seat having a squared shaft with trunnion ends directly coupled to the turning force.

A further object of the invention is to provide a self-raising seat which uses coil springs as the operating force, with the springs being wholly housed within the molded hinge blocks.

A still further object is the provision of reenforced hinge blocks, whereby the strains imposed by the spring are relieved from the plastic molded blocks.

Yet another object of the invention is to provide a self-raising seat which utilizes the hinge blocks as means operating in conjunction with the seat to provide limits to maintain a fixed, predetermined, raised position for the seat.

Other objects of the invention will become apparent from the following description of one practical embodiment thereof, when taken in conjunction with the drawings which accompany, and form part of, this specification.

In the drawings:

FIGURE 1 is a perspective view of a wall hung water closet, with a self-raising seat embodying the principles of the present invention mounted on the back apron of the seat;

FIGURE 2 is an exploded perspective view of the back portion of a water closet seat and the means for mounting the seat on a water closet;

FIGURE 3 is a vertical, longitudinal section through the seat mounting, and is taken on the line 3—3 of FIGURE 1;

FIGURE 4 is a transverse section through the hinge bearing, and is taken on the line 4—4 of FIGURE 3;

FIGURE 5 is a transverse section through the spring compartment of the hinge block, taken on the line 5—5 of FIGURE 3, with the seat being shown in raised position; and

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FIGURE 6 is a view similar to FIGURE 5, the seat being shown in lowered position ready for use.

In general, the seat assembly includes a seat which is fixed against rotation relative to a hinge pin which is journaled in hinge blocks carried by mounting bolts. The blocks house springs which bias the seat to raised position.

Referring to the drawings in detail, and first to FIGURE 1, there is shown a wall mounted water closet 1, which has the usual open bowl 2, and wall mounting flanges 3 at the rear. There is a flat apron 4 at the rear, upon which a seat assembly 5 is mounted.

It will be seen by reference to FIGURE 2, that the seat assembly 5 includes a seat proper 6, a hinge pin 7, and mounting bolts 8 which carry at their tops hinge blocks 9. The hinge pin extends through the seat and has its ends journaled in the hinge blocks, as will be described. The mounting bolts extend through openings 10 in the water closet apron 4 (see FIG. 3) to position the hinge blocks on mounting pads 11 on the water closet apron. The mounting bolts are secured in place through use of the usual washers 12 and nuts 13.

The seat 6, as shown, has the usual rearwardly extending tongue 14, which has a longitudinal opening 15 to receive the hinge pin 7. The tongue is reduced in width, relative to over-all seat, being just wide enough to fit between the hinge blocks. The opening 15 in the rear tongue of the seat is shown as square in cross-section, but it may have any other desirable non-round shape. A metal reenforcing sleeve 16 is inserted in the opening 15 and fits snugly enough to stay in place. If the seat is a molded one, the sleeve can be molded in place in the tongue of the seat.

The hinge pin 7 has a central portion 17 of non-round cross-section, which will conform in size and shape to the interior of the reenforcing sleeve 16 in the seat tongue 14. The projecting ends of the pin will be cylindrical, and of less diameter than the thickness of the squared portion 17, to provide trunnions 18 at either side of the central section. The trunnions will be mounted in the hinge blocks 9 for free rotation. If desired, the hinge pins can be molded in place in the seat, instead of being insertable in a sleeve as shown.

Each hinge block has a sleeve 19, fixed to the top of the mounting bolt 8, in such manner as to position the axis of the sleeve normal to the axis of the bolt. At one end of the sleeve, there is a cup 20, which is concentric to the sleeve, and forms an enlarged chamber into which the sleeve opens. There is a plastic housing 21 molded about the sleeve and cup to provide a suitable outer shape and finish for the block. Housing 21 has a flat base 22, which forms a bottom to rest on the mounting pad 11. The housing projects beyond the edge of cup 20 to form an annular lip 23 around the cup to provide a seat for a snap-in plug 24 which forms a cover for the cup, and completes the enclosure for the cup.

Cup 20 is a receptacle for a coil spring 25, which provides the force necessary to lift the seat. The outer convolution of the spring terminates in an outwardly bent anchor portion 26, which fits within any one of a series of slots 27 formed through the wall of the cup and the surrounding housing adjacent the base of the housing. This will hold the outer end of the spring against movement, and the slot 27 chosen will determine the spring adjustment. The inner convolution of the spring fits about the trunnion 18 of the hinge pin 7, and has its terminal portion bent inwardly to provide an anchor 28. The hinge pin trunnion is slotted in its outer end, as at 29, and the anchor portion 28 of the spring fits into this slot. Thus, if the hinge pin turns within the hinge block it will cause winding and unwinding movements of the springs. It has been found that the action of the seat is better controlled, particularly after the moment of lifting is completed, if the

springs work in opposite directions which precludes the seat from recoiling.

Seat 6 projects at each side of the rear tongue 14, forming extensions 30 which overlie portions of the mounting blocks at either side of the seat. The corresponding portions of the mounting blocks are of reduced size, and are so shaped that they cooperate with a surface of the extension 30 to provide a limit stop for the seat when in raised position. To this end, the extensions have surfaces 31, adjacent the top side of the seat, for face contact with a top surface 32 of the cut-a-way portion of the underlying hinge block 9 when the seat is in raised position. The angles of the respective surfaces 31 and 32 are such, that the surfaces will abut, and be in face contact, when the seat has raised to a point slightly beyond the vertical. The remaining surface 33 of the seat extension 30 is beveled so that there will be no possibility of it contacting the mounting block. The back portion of the mounting block 9 is also cut away, as at 34, so that the seat may be swung over to its downward position without contacting the mounting member.

When the seat is to be assembled for use, hinge pin 7, if it is not molded in the seat, will be put into the squared opening 15 in the rear tongue 14 of the seat, and positioned with respect to the tongue so that only the trunnions 18 are projecting beyond the tongue. Hinge blocks 9 are then slipped over the trunnions, with the trunnions extending through the sleeves 19 and projecting into the cups 20. Coil springs 25 are placed in the cups, their inner anchoring portions 28 being inserted in the slots 29 of the trunnions 18, and the outer anchoring portions 26 will be placed in one of the slots 27 in the cup and hinge block housing. It will be necessary, of course, that the springs be tensioned sufficiently before anchoring in the slots 27 and 29, so that when the seat is pushed to its lowered position and released, the springs will have enough force to lift the seat and raise it to its upper position of rest with the mating surfaces 31 and 32 of the seat extension and hinge blocks in contact. It will be seen that whenever the seat is moved to its downward position the springs will be re-tensioned. The final tension of the springs will be determined by the selection of the slot 27 in which the outer anchoring portion 26 is inserted. After the springs are in place, the plugs 24 will be snapped into position to close the cups and prevent dirt from entering. Pads 11 can then be threaded onto the mounting bolts 8 and pressed up into position against the bottoms of the hinge blocks, and the assembly will be ready for mounting. The mounting is done in the usual way by inserting bolts 8 through openings 10 in the rear apron of the water closet, and then putting on the washers 12 and nuts 13.

When in place, the seat will require no attention, beyond normal cleaning, as there are no parts to break or get out of order, unless a spring should break, and then a repair can be made quickly by removing the plug 24, taking out the old spring, inserting a new one and snap-

ping the plug back into position. All of the parts are wholly enclosed, and only those members are exposed which are the equivalent of those on a conventional water closet seat. Thus, the cleaning is very simple.

While in the above one practical embodiment of the invention has been disclosed, it will be understood that the specific details of construction shown and described are merely by way of illustration, and the invention may take other forms within the scope of the appended claims.

What is claimed is:

1. A self-raising seat assembly for water closets comprising, a seat, a hinge pin non-rotatably mounted within the seat and having cylindrical trunnions projecting beyond the seat at either side, hinge blocks having bearing openings journalling the hinge pin trunnions, coil springs each having one end attached to a hinge pin trunnion and to the hinge block journalling the respective trunnion, means for attaching the hinge blocks to a water closet, and cup-like receptacles in the hinge blocks in which the springs are housed.

2. A self-raising seat assembly for water closets as claimed in claim 1 wherein, there is a removable plug closing each of the hinge block cup-like receptacles.

3. A self-raising seat assembly for water closets as claimed in claim 1 wherein, the bearing openings in the hinge blocks are formed by metal sleeves, the means for attaching the hinge blocks to a water closet are mounting bolts rigidly attached to the metal sleeves, the cup-like receptacles are concentric to and joined to the metal sleeves, and the sleeves, cup-like receptacles and adjacent attached portions of the mounting bolts are embedded in a plastic housing.

4. A self-raising seat assembly for water closets as claimed in claim 3 wherein, removable plugs close the cups.

5. A self-raising seat assembly for water closets as claimed in claim 4 wherein, the seat and hinge blocks have surfaces which abut when the seat is fully raised to check the seat against further movement in the raising direction.

6. A self-raising seat assembly for water closets as claimed in claim 5 wherein, the springs act in opposite directions to prevent the seat from recoiling.

References Cited

UNITED STATES PATENTS

1,792,811	2/1931	Bustin	4—251
2,064,628	12/1936	Raflovich	4—240
2,352,133	6/1944	Sperzel et al.	4—241
2,525,492	10/1950	Leidy	4—241
3,032,777	5/1962	Young	4—240

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U.S. Cl. X.R.

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