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[31]	816,691/67 and 207-A/68	Primary Examiner—Laverne D. Geiger	
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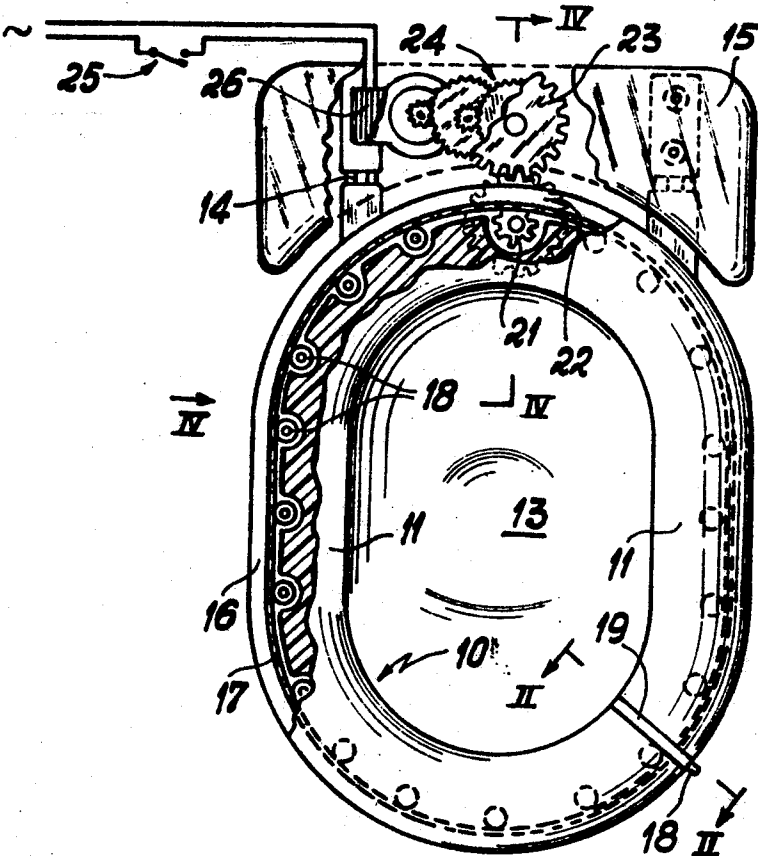
[54] WATER-CLOSET-SEAT-CLEANING DEVICE
6 Claims, 4 Drawing Figs.

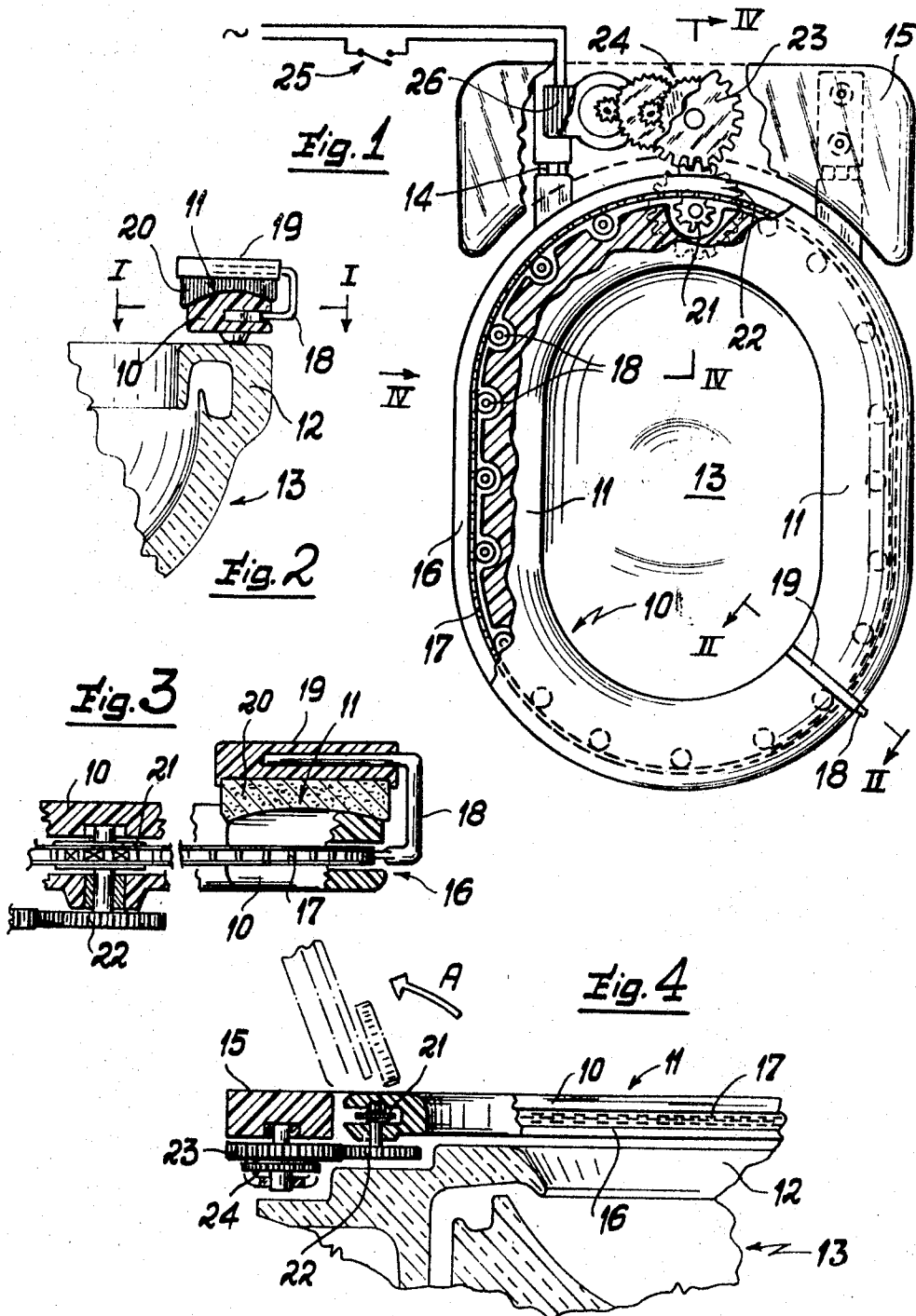
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ABSTRACT: An annular seat designed to cover a water closet bowl and having a human-body-contacting upper face, comprising a chain arranged in closed loop thereabout, sweeper means secured to a point of such chain and including a cleaning and disinfecting pad positioned for frictionally engaging said upper face and cleaning the same as progressed thereon and about upon causing said chain to progress in the path defined by its loop, and motor means drivingly connected to said chain for rotating same and causing said pad to sweep along said face





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WATER-CLOSET-SEAT-CLEANING DEVICE

BACKGROUND OF THE INVENTION

The present invention relates to the field of toilet or lavatory implements and more particularly it has for its object an improved annular seat for water closet or toilet water bowl means, the seat being so constructed and provided with means designed for ensuring proper cleaning and disinfection of its human body contacting upper surface, before or after use of the sanitary fitting.

Such w.c. bowl seats are well known and widely used. They generally consist of a partially or completely annular flat member integrally made of wood or, according to more recent techniques, of plastics. The member is shaped to be superimposed upon and cover the toilet bowl upper edge or rim and it is hingedly connected to a rear part secured to the upper rear portion of the bowl. The upper face of such member has suitably rounded edges and it is designed for actually contacting undressed parts of human bodies. Perfect and constant cleaning of sanitary fittings in general and of said seat's upper face is obviously matter of welfare and hygiene.

Such cleaning and more particularly disinfection and sterilization of said seats, namely where contacting human bodies, is of primary importance where the sanitary implement is at public disposal, such as within public toilets, hotels, schools, hospitals, passenger ships and trains and so on. To provide manual cleaning by attendants after or before any individual use is actually not feasible.

SUMMARY OF THE INVENTION

The invention herein disclosed comprises a water closet bowl annular seat having a flexible pulling member, preferably a chain, arranged in a closed loop thereabout and guidedly supported, preferably in an outwardly open recessed portion of the seat body, for gyratory progression of said member about said seat body. A pad or brush or sweeper means is secured to one point of said looped member and shaped and positioned for frictionally engaging the said seat upper face and sweepingly traveling at least along the portion of said face which actually is contacted by human bodies as said looped member is caused to progress along the path defined by same loop. Drive means such as a grooved pulley or preferably a sprocket wheel is rotatably supported and positioned to drivingly engage said looped member. Preferably said chain and motor means are connected to said drive means for driving said means, looped member and sweeper means when cleaning of said seat upper face is desired or expedient.

According to a preferred feature of the invention, the motor means consists of a fractional horsepower electric motor supplied through an user-controlled switch means. The device might however be automatically activated for example upon closing of the supply circuit by lowering of the hinged seat in its service position. Conventionally constructed and connected limit or time-controlled switch means can be provided for discontinuing the drive such as when the sweeper means has completed one or more full revolutions over and about the seat or upon a given service time, respectively.

According to another preferred feature of the invention, the motor means and part of the transmission means are secured to and preferably beneath the stationary part of water closet bowl seat, the transmission being designed for ensuring proper drive at least when the seat is lowered in its service position.

According to a further preferred feature of the invention, the sweeper means comprise an adsorbent pad, preferably of an alveolate or cellular material such as foam rubber or plastic so that a proper cleaning, disinfectant and sterilizing liquid can be caused to impregnate said pad. Preferably said pad is secured to a rigid grip or handle portion and such latter portion is detachably connected to a suitably shaped brace means secured to said looped member, preferably to one or to two spaced links of said chain, whereby said sweeper means can be easily replaced with a freshly impregnated spare member or a new one.

The invention will be best understood with reference to the accompanying drawing and description of the invention.

BRIEF DESCRIPTION OF THE DRAWING

In the drawing:

FIG. 1 comprises a partially fragmentary plan view taken generally along line I-I of FIG. 2, of the w.c. bowl seat and of the various components associated therewith according to the invention;

FIG. 2 is a cross-sectional view of the seat taken generally along line II-II of FIG. 1;

FIG. 3 illustrates partly in side elevation and partly in sectional view certain details of the sweeper and drive means; and

FIG. 4 is partly a side elevation and partly a longitudinal sectional view of the seat taken generally along line IV-IV-IV of FIG. 1.

Similar reference characters refer to similar parts in each of the FIGURES of the drawing.

DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring to FIGS. 1 and 2, the improved water closet bowl seat includes an annular preferably elongated seat body generally indicated at 10, having an upper face 11 the fore and side parts of which are contacted by the sitting user. In service, the seat body is superimposed to the rim 12 (FIGS. 3 and 4) of the toilet bowl 13, according to the art. The seat body 10 is hingedly connected, by suitable hinge means such as at 14, to a stationary rear part 15 secured, to, as conventional in the art, the upper rear portion of bowl 13. Further as conventional in the art, said seat body can be upwardly and rearwardly rotated in directional A (FIG. 4) to uncover the bowl rim 12. In FIG. 4 the rotated body is fragmentarily shown by dot-and-dash lines.

The out-facing edge of seat body 10 has an outwardly open recess 16 formed thereabout and a closed loop formed by a transmission chain, pulling member or looped member 17 is located in said groove-like recess 16. Said chain is preferably made of stainless steel, or of plastic or other suitable material as to resist moisture and in general to the lavatory fitting conditions. A plurality of idle rollers, such as ball bearings, plastic rollers and so on, is provided for ensuring guiding and effortless driving of said chain 17 about and within said recess 16. The chain embodies a flexible pulling member adapted and arranged for gyratory motion about the seat member. Said pulling member could be however made of a nylon cord or other suitable flexible and pull resisting material.

At one location in the length of said looped member 17, namely to one or two links of chain 17, a shaped brace or bracket 18 is secured, to provide a bracket having an upper portion above the upper face 11 of the seat body 10. To said upper portion of bracket 18 there is detachably and replaceably secured the handle or grip part 19 of a sweeping means comprising a pad portion 20 adapted and positioned for frictional engagement with said upper face 11 of the seat. Said pad 20 can consist of a brush having resilient bristles or preferably of a shaped member of alveolated or cellular rubber or rubbery material, such as of sponge rubber or plastics, adapted to be impregnated with a suitable well known liquid disinfectant and deodorizer. Consequently, upon driving said chain 17 about the seat body, the pad 20 is caused to progress above said seat body throughout cleaning and disinfecting the upper human body contacting face 11 thereof. The impregnating liquid in se does not form part of this invention. It will be preferably chosen among those capable of fast evaporation for promptly restoring the seat in service condition after each sweeping action.

The chain 17 is engaged by a sprocket wheel 21 mounted for rotation in the rearmost portion of annular seat and having a pivot axle secured to a driven gear 22, which, at least when the seat body 10 is in its lowered service position (FIG. 4) is in meshing relationship with a driving gear 23, mounted for rotation in the stationary rear part 15. By means of a suitable gearing such as diagrammatically illustrated at 24, said latter gear

23 is drivenly connected to a fractional horsepower electric motor such as 26.

Said motor 26 is connected to a source of current (not shown) by means of a circuit comprising at least one switch 25 for activating and deactivating the motor and therefore the sweeping device. Such switch can be of pushbutton or other type adapted for manual operation. It can as well be connected to the hinged seat body so that the device will be activated upon raising or lowering of said seat. Switch controlling stop means adapted for stopping the motion of the sweeper upon completion of one or few revolutions about the seat, or after a predetermined time of operation, can be also provided. This is, of course, relatively obvious to those skilled in the art.

Although there is herein shown and described only one form of device embodying the invention, it is to be understood that various changes and modifications may be made in the apparatus within the scope of the appended claims without departing from the spirit and scope of the invention.

We claim:

1. In a toilet, a combination comprising a toilet bowl having a rear portion, an annular toilet seat having an upper face and an outer annular edge; an endless flexible pulling member; guide means carried only by said seat in the region of said annular edge for guiding said endless flexible pulling member in a closed loop about said outer annular edge; sweeper means secured to said flexible pulling member comprising a pad shaped for frictional engagement of said upper face of said

seat; and motor means mounted on said rear portion of said bowl and drivingly connected to said pulling member for moving the latter about said annular edge so that said sweeper means will move over the whole upper face of said toilet seat.

2. A combination as defined in claim 1, wherein said toilet seat is hingedly connected to said rear portion of said bowl and wherein said motor means comprise a motor mounted on said rear portion and gear means drivingly connecting said motor with said pulling member, part of said gear means being secured to said rear portion of said bowl and another part to said seat for meshing engagement with said first-mentioned part at least when said seat abuts against said bowl.

3. A combination as defined in claim 1, wherein said seat has an outwardly open groove formed at its outer edge to provide an annular recess thereabout, and the said pulling member is guidedly positioned in said recess.

4. A combination as defined in claim 1, wherein said pulling member consists of a chain and wherein a sprocket is supported in said seat in meshing relationship with said chain and drivenly connected with said motor means.

5. A combination as defined in claim 1, wherein said sweeper means is detachably and replaceably secured to one end of a bracket the other end of which is fixedly secured to said pulling member.

6. A combination as defined in claim 1, wherein said sweeper means comprises a pad portion of spongelike resilient material adapted for impregnation by a liquid.

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