March 1, 1938. C. D. ROE 2,109,829

WATER CLOSET SEAT SUPPORT

Filed Oct. 28, 1936

Fig. 1

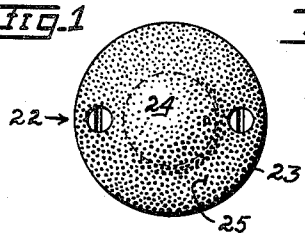


Fig. 2

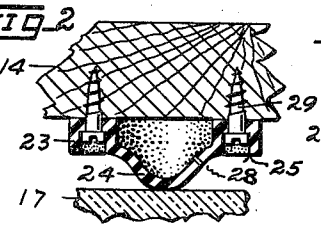


Fig. 3

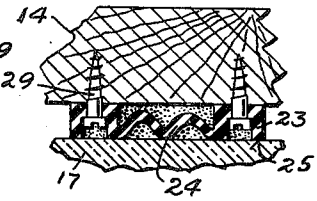


Fig. 4

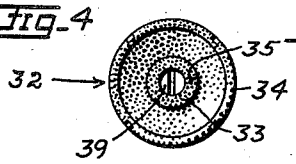


Fig. 5

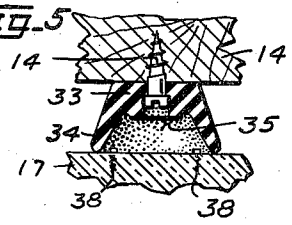


Fig. 6

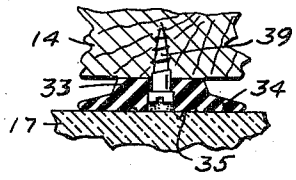


Fig. 7

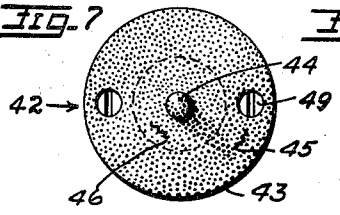


Fig. 8

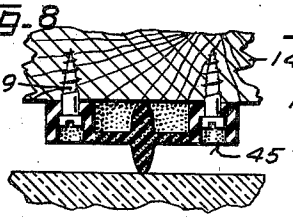


Fig. 9

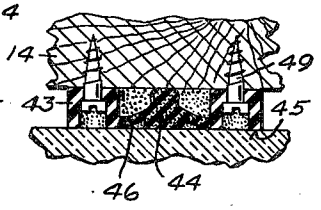


Fig. 10

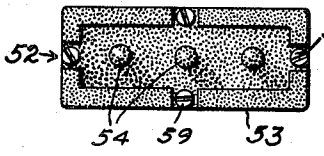


Fig. 11

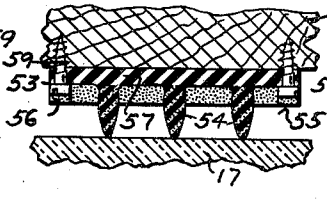


Fig. 12

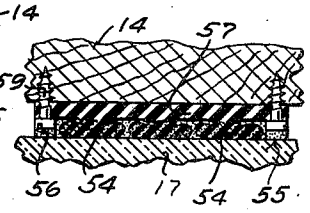
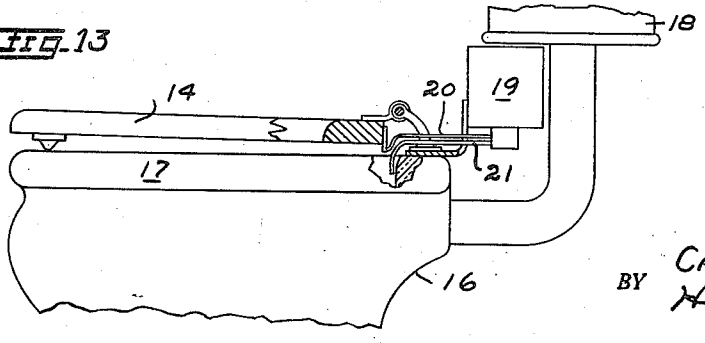


Fig. 13



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Patented Mar. 1, 1938 2,109,829

UNITED STATES PATENT OFFICE

2,109,829

WATER CLOSET SEAT SUPPORT

Caleb D. Roe, Richmond, Calif.

Application October 28, 1936, Serial No. 107,992

5 Claims. (Cl. 4—248)

The invention relates to a means for resiliently supporting the front end of a water closet seat from the underlying watercloset bowl, the seat being supported at its rear end by a hinge means.

An object of the invention is to provide a support member at the front of a hinged water closet seat such that a dropping of the seat upon the bowl may not produce a shock which is damaging to the seat or the bowl, or produce an undue noise.

Another object of the invention is to provide a seat supporting member which provides different degrees of resilient support when the seat is unoccupied and occupied.

A further object of the invention is to provide a seat supporting member of the class described which permits only a limited and substantially fixed degree of depression of the seat beneath the weight of an occupant thereof or the application of external pressure thereto.

The invention possesses other objects and features of advantage, some of which, with the foregoing, will be set forth or be apparent in the following description of typical embodiments thereof, and in the accompanying drawing in which,

Figure 1 is an underneath plan view of an element embodying the features of present invention.

Figure 2 is an axial section taken through the element of Figure 2 while said element is mounted on and beneath a closet seat to support solely the seat from the rim of a closet bowl.

Figure 3 is a section corresponding to that of Figure 2 and showing the form of the element when the seat is depressed to its permitted limit, as under the weight of a person thereon.

Figures 4 and 5 and 6 are views of another form of support member embodying the present invention, the views corresponding to those of Figures 1 and 2 and 3 respectively.

Figures 7 and 8 and 9 are views of an additional form of member embodying the present invention, the views corresponding to those of Figures 1 and 2 and 3 respectively.

Figures 10 and 11 and 12 are views of still another form of support member embodying the present invention, the views corresponding to those of Figures 1 and 2 and 3 respectively.

Figure 13 is a fragmentary view at a reduced scale showing the application of the support element of Figures 1 to 3 to the seat of a water closet.

Figure 13 illustrates a usual water closet structure in which a water closet seat 14 is hingedly secured at its rear end by means of a usual type of hinge structure 15 mounted on a water closet bowl 16 having a top rim 17. A usual flush tank 18 is provided for supplying charges of flushing water to the bowl 16. A reservoir 19 is provided adjacent the tank 18 for containing a supply of a liquid disinfectant and/or deodorant and/or fumigant for delivery of charges thereof within the bowl following, or during the use of, the watercloset. A trigger member 20 extends from a suitable valve means associated with the reservoir 19 for actuation to release a charge of liquid from the reservoir 19 for discharge into the bowl through a pipe or tube 21, and said trigger extends forwardly to an engagement with the seat 14 for operation by the seat each time the seat is lowered from the normal position thereof in which a member embodying the present invention supports it over the bowl in the relation illustrated, a lowering of the seat to actuate the trigger being effected by a lowering of the seat to a more or less predetermined degree.

It will now be noted that differently formed support members 22, 32, 42 and 52 are respectively illustrated in Figures 1 to 3, 4 to 6, 7 to 9, and 10 to 12, and that any one or more of said members may be engaged between the bowl rim 17 and the under side of the seat 14 as a support means for the seat. Since water closet bowls are usually of ceramic ware and water closet seats are usually of wood or metal or a molded composition, the members 22 or 32 or 42 or 52 would usually be secured to the seat as is particularly illustrated for the various members.

For purposes of illustration, one member 22 is shown in Figures 1 and 2 and 3 and 13 as being mounted on the seat 14, while one each of the forms 32 and 42 and 52 are shown as if mounted on the same seat 14 in the Figures 5 and 6, 8 and 9, and 11 and 12, respectively. It will be understood that two or more of the support members might be cooperatively used at a water closet seat, if desired or required.

Referring now to the structure of the member 22, the same is seen to comprise an annular base portion 23 for seating against a flat surface such as the under face of the seat 14, and a generally conical hollow extension 24 protrudes from and beyond the outer end of the base portion 23 as a closure for that end of the base. The portions 23 and 24 are preferably integrally related to provide the unitary member 22, and said member is preferably formed of a homogeneous material

such as a resilient and fairly hard rubber composition.

The conical extension element **24** has a relatively thin wall and is otherwise so constituted that it resiliently resists the deformation which is urged upon it as it is pressed against an opposing surface such as that of the bowl rim **17**, and will resume its normal form when it supports only the weight of the seat. Under the weight of a person on the seat, or an equivalent pressure against the seat, the extension element **24** is arranged to be deformed for complete disposal within the hollow of the base **23** in the general manner shown in Figure 3. When the yielding element **24** is completely displaced, the outer face **25** of the base element **23** is arranged to serve as a resilient and positive stop for limiting the movement of the seat toward the rim; to the latter end, the base is relatively thick radially of its circle. The member **22** may be suitably fixed to the seat **14**; as shown, the rim **23** of the member is axially perforated to receive screws **29** therethrough and with their heads countersunk therein for the purpose. The side of the extension **24** may be provided with an air passage **28** to facilitate its deformation under pressure.

The member **32** is seen to be generally frustoconical, and has an inner disc-shaped base portion **33** and a flaring skirt-like portion **34** at its outer end extending from the periphery of the base **33**, the small end of the member being engaged against the under face of a seat **14**. The element **34** is stiff enough to normally support the seat **14** in spaced relation from the base element **33**, and a person's weight on the seat is arranged to cause a deformation of the element **34** to flatten it out against the bowl rim **17** in the general manner shown in Figure 6 and until the outer face **35** of the base **33** directly engages the rim. If desired, the free edge of the element **34** may be provided with one or more notches **38** to permit the escape of air from within the member **32** as the element is flattened out by a depression of the seat. A mounting screw **39** is engaged axially through the base **33** with its head countersunk in the base to permit the engagement of the bearing face **35** of the base element with a bowl rim **17**.

In the embodiment of Figures 7 to 9, the member **42** comprises an annular base element **43** and a compressible and resilient element **44** extending centrally within the cavity of the base portion and normally protruding beyond the plane of the bearing face **45** of the base **43**. The element **44** is normally form-retaining and may comprise a hollow rubber body or be formed of sponge rubber, the latter being indicated in Figures 8 and 9. In the present instance, the element **44** is spindle shaped and is coaxial with the base **43** whereby its opposite ends are arranged to simultaneously and directly bear against the opposed seat and rim faces. For securing the element **44** in its appointed position, the element is shown as provided with an equatorial flange **46** which is suitably secured to the base element **43** at the outer end of its bore whereby the element and flange assembly may be entirely forced within the base cavity when the seat is pressed down to engage the base bearing face **45** directly with the bowl rim **17**. Preferably, and as shown, the flange **46** is integrally attached to the base **43**; the latter may be accomplished by vulcanizing when the compositions of the parts are rubber, it being noted that the composition of the base might be less yielding under pressure than that of the element **44**. Screws **49** may extend through the base element **43** for mounting the member **42**, the screw heads being preferably countersunk in the base. Since the structure compressed within the cavity of the base **43** when the element **43** engages the bowl rim **17** does not fully occupy said cavity, the venting of the latter may be omitted.

The member **52** is seen to be rectangular in outline and comprises a base portion **53** recessed from its outer side and mounting compressible and deformable projections **54** which normally extend beyond the plane of the bearing face **55** provided by a rim part **56** of the base which cooperates with a flat inner base plate **57** to define the sides and bottom of a recess in the member **52**. The projections **44** are generally cylindrical and extend transversely from the base part **47** to which they are secured; these elements may be of sponge rubber and are vulcanized or otherwise secured in fixed integral relation thereto. The material of the base element **53** would usually be less yielding than that of the projections **44**. When the bearing face **55** of the rim **56** engages a bowl rim **17**, the projections **44** are longitudinally flattened out and otherwise deformed whereby they then lie fully within the cavity of the base **53** while engaging the bowl rim to resist their deformation. The rim **46** may be notched out and perforated to receive mounting screws therethrough in countersunk relation to it.

It will now be noted that all of the members **22** and **32** and **42** and **52** provide normally elements **24** and **34** and **44** and **54** which are deformable under pressure and against an inherent structural resiliency which tends to maintain them in normal form. The degree of permitted deformation of said elements under pressure thereagainst is limited by the operations of the respective base portions **23** and **33** and **43** and **53** to engage an opposed surface from which the element is normally held spaced by the respective deformable element which it carries; this operation of the base elements as stops is understood to positively protect the deformable elements from a destructive deformation and/or compression thereof. Since the base portions of the various members are of non-metallic and yielding material, their contact with a porcelain or enamel or wood surface may not mar the same. Also, a seat so supported will be generally more comfortable to sit upon, and will make little, if any, noise, if dropped into place on the deformable elements of the members.

The described action of the bases of the various support members to operate as stops to definitely limit the depression of a seat or other object which is normally supported by and from an underlying support member by the combined functioning of the relatively deformable and undeformable elements of the members is of further value when a definite degree of seat depression movement is desired. Thus, in the arrangement particularly illustrated in Figure 13, the trigger member **20** would usually require a definite displacement movement for its functioning, and this may readily be provided by the use of the described support members, either by the appropriate proportioning of the support members and/or by appropriately spacing the member used from the axis of hinging of the seat.

While I have herein and herewith particularly indicated the controlled and resilient support of

a water closet seat which is operative upon its displacement to release a charge of disinfectant or other liquid, it is noted that the movements of water closet seats to actuate air circulating blowers or cause the discharge of water from flush tanks are old and well known expedients in the water closet art; accordingly, an express or implied limitation to the specifically disclosed application of the present support members to closet seats which control the actuation of some supplementary device is not intended. Also, it will be readily understood that a plurality of the support members may be installed on a water-closet seat, or on an underlying fixed support for the same, for providing the required support which permits a limited depression of the seat as the result of external pressure thereon.

From the foregoing description taken in connection with the accompanying drawing, the advantages of the construction and method of use will be readily understood by those skilled in the art to which the invention appertains. While I have described the features and principles of operation of structures which I now consider to be preferred embodiments of my invention, I desire to have it understood that the showing is primarily illustrative, and that such changes may be made, when desired, as fall within the scope of the following claims.

I claim:

1. In combination, a closet bowl, a closet seat hingedly fixed to said closet bowl at the rear thereof and overlying the bowl, and a unitary member engaged between the seat and bowl at the front thereof to support the seat for a limited degree of depression thereof, said member comprising a deformable and relatively yielding element and a relatively unyielding element arranged to jointly support the seat from the bowl thereat, said yielding element being deformable and displaceable when the pressure exerted on the member by the seat exceeds that of the weight of the seat so that the unyielding element is arranged to directly engage the seat as a stop to limit the depression of the seat.

2. In combination, a closet bowl, a closet seat hinged at the rear of the bowl and overlying the bowl, and a unitary member engaged between the seat and bowl at the front thereof to normally support the seat for a limited degree of depression thereof, said member comprising a relatively unyielding element and a relatively yielding element extending beyond the first element whereby the bowl and seat are normally engaged by the different said elements in their greatest degree of separation, said yielding element being arranged for such deformation under the pressure of the weight of a person on the seat as to permit the direct engagement of the unyielding element of the member directly with the seat and bowl as a stop to limit the movement of the seat toward the bowl.

3. In combination, a closet bowl, a closet seat hingedly fixed to said closet bowl at the rear thereof and overlying the bowl, a unitary member mounted on the seat at the front thereof to normally support the seat from the bowl for a limited degree of depression of the seat about its axis of hinging, and an actuator member engaged by said seat for displacement when the seat is depressed to the permitted degree therefor, said support member comprising a relatively unyielding base element providing a bearing surface and a relatively yielding element normally extending beyond said bearing surface in engagement with the bowl, said yielding element being deformable under pressure on the seat to permit a direct engagement of said bearing surface of the base element with the bowl for limiting the degree of depression of the seat to that required for actuating the seat-controlled actuator member.

4. In combination, a closet bowl, a closet seat disposed above the bowl, and a unitary member engaged between the seat and bowl for supporting the seat from the bowl for permitting only the same predetermined and limited degree of depression of the seat thereat under different loads on the seat, said member comprising a relatively unyielding base element providing planar and generally parallel bearing faces and a relatively yielding element normally extending beyond a bearing face of the base element whereby the bowl and seat are normally engaged by the different said elements, said yielding element being deformable and displaceable under pressure on the seat to dispose it entirely between the planes of the bearing faces of the base element whereby the latter element is operative as a stop with respect to the depression of the seat.

5. In combination, a closet bowl, a closet seat disposed above the bowl, and a unitary member engaged between the seat and bowl for supporting the seat from the bowl for a limited depression of the seat thereat, said member comprising a relatively unyielding base element having an interior cavity defined within a peripheral wall providing mutually parallel planar bearing faces at the wall ends, and a relatively yielding element normally extending beyond a said bearing surface to engage the seat or bowl and disposed centrally of the member, said yielding element being deformable under pressure on the seat to depress the latter for disposition entirely in the cavity of the base element for permitting the direct engagement of the bearing faces of the base element with the seat and bowl.

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