Dec. 1, 1931. W. A. CARMICHAEL 1,833,890

CONCEALED CHECK TOILET SEAT HINGE

Filed Feb. 6, 1930

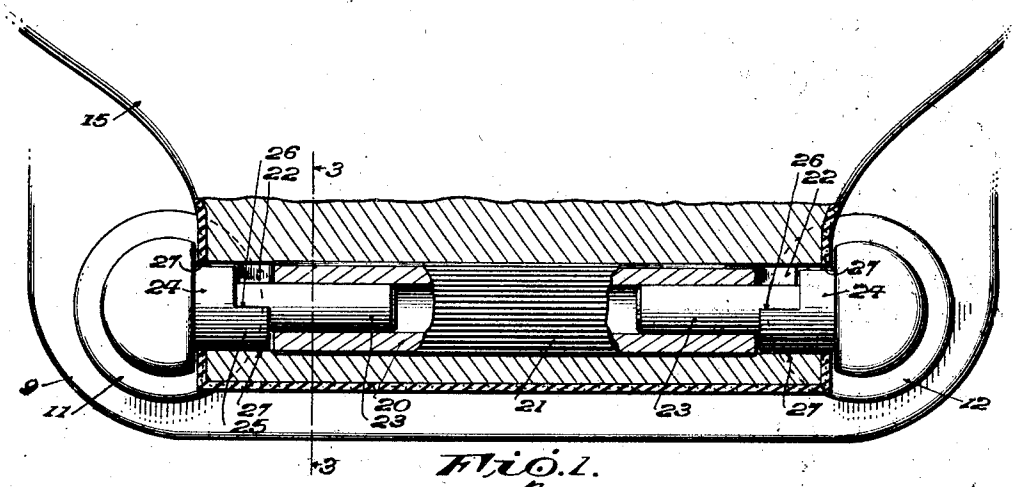


Fig. 1.

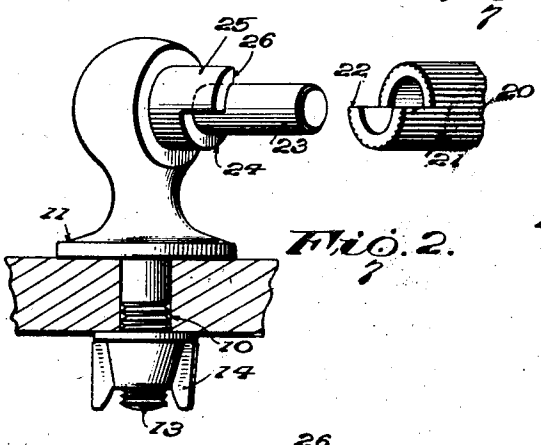


Fig. 2.

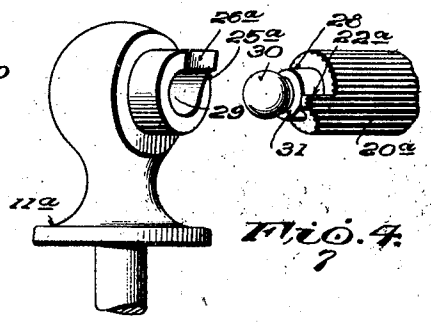
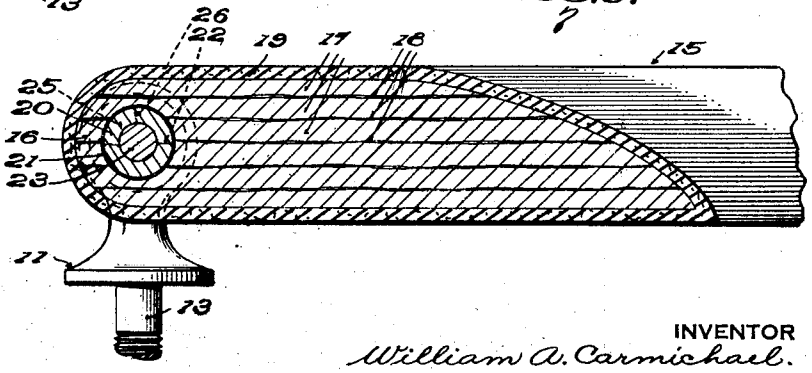


Fig. 4.

Fig. 3.



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UNITED STATES PATENT OFFICE

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CONCEALED CHECK TOILET SEAT HINGE

Application filed February 6, 1930. Serial No. 426,399.

This invention relates to toilet seats and hinges and has particular reference to devices of this character that have few parts and wherein a minimum of such parts are exposed to view.

One of the objects of the invention is to provide check or stop means in hinges of this class for the purpose of limiting the swinging or rotative movement of the toilet seat on its hinge, such means being concealed from view.

Besides the general object of providing a simple, inexpensive and compact device of the above described character, other objects will appear to those skilled in the art to which it appertains from a consideration of the following detailed description of the different embodiments of the invention taken in connection with the accompanying drawings, in which

Fig. 1 is a plan partly in section of a toilet seat and hinge posts with one form of stop means incorporated therewith;

Fig. 2 is a perspective view of one of the hinge posts and cooperative sleeve of Fig. 1;

Fig. 3 is a sectional view taken on the line 3—3 of Fig. 1, and

Fig. 4 is a perspective view similar to Fig. 2 of a modified form of the invention.

Referring to the drawings in detail the reference character 9 indicates a toilet bowl which is usually constructed of porcelain and is provided with a pair of vertical apertures 10. A pair of hinge posts 11 and 12 having threaded shanks 13 may be positioned in the apertures 10 in the toilet bowl and may be secured in position by wing nuts 14.

A toilet seat 15 has a rearwardly extending projection 16 which is positioned between the two hinge posts 11 and 12 and is pivotally connected thereto in a manner to be presently described. The seat may comprise a plurality of laminations 17 which are held together by being molded with thin intervening layers 18 of hard rubber or similar material, a somewhat thicker layer or veneer 19 of rubber providing the outer finished surface of the seat. Extending from one lateral edge of the rearwardly extending portion 16 of the seat to the other, there may be embedded therein a cylindrical sleeve 20. This is shown as having a plurality of longitudinally extending grooves or corrugations 21. When the laminations of which the seat is made are placed together the sleeve 20 is molded in place, as it were, by virtue of the rubber or other plastic material being forced into the corrugations 21 and after the plastic material has hardened the sleeve is thereby firmly secured in place. At each end the sleeve 20 may have substantially one-half thereof extend farther longitudinally so as to provide a stop 22.

The upper portion of each hinge post may be provided with a horizontally extending cylindrical pin 23 which is preferably integral therewith. An annular portion 24 may extend outwardly from each post around the pin 23. A segmental portion or projection 25 may extend somewhat farther from the hinge post than the annular portion 24 and has a surface 26 against which the stop 22 on the sleeve 20 comes to rest. It may be noted that the annular portion 24 is somewhat smaller in diameter than the opening in which the sleeve 20 is placed so that there is a clearance between the portion 24 and the seat 15 as indicated at 27. This prevents any contact or rubbing at this point and particularly eliminates any possibility of the external veneer of rubber 19 from being chipped at the edges of the opening. Furthermore it will be noticed that the annular portion 24 prevents dirt from readily reaching the bearing proper which is between the pin 23 and the sleeve 20. The foregoing construction results in both the stop and bearing being well recessed within the seat so that they are not visible and the assembled arrangement has a neat and compact appearance.

In assembling the parts on a water closet bowl the bearing pins 23 of the hinge posts 11 and 12 are first inserted into the seat and into the inner portion of the sleeve 20. The threaded shanks 13 of the posts are then placed in the apertures 10 of the bowl 9 and secured in position by means of the wing nuts

14. In describing the operation of the concealed check hinge, attention is first called to the relative position of the parts as shown in Fig. 1, the perspective view of Fig. 2 being for the same position, the seat being in its lowered position. The stop 22 and the surface 26 of the projection 25 are a little more than ninety degrees apart. As the seat is raised the sleeve 20 is rotated about its axis and the stop 22 approaches the surface 26 until when the seat has passed beyond the vertical position slightly the stop and surface rest against each other and prevent further movement. The seat is thus held in an upright position independently of any wall stop or other means external to the hinge itself.

Two similar check devices are shown in Fig. 1 one at each side of the rearwardly extending portion 16 of the seat but it is obvious that such check means may be provided for one side only. Such a construction is particularly desirable for use in connection with a removable toilet seat such as described in my co-pending application Serial No. 341,649 filed Feb. 21, 1929. Fig. 3 shows a form of hinge stop adapted for use where the opposite hinge post is of a detachable type. A sleeve 20*a* which is adapted to be embedded in a toilet seat has a cylindrical pin 28 secured therein or integral therewith. The sleeve 20*a* is provided with a stop 22*a* which preferably extends away from the sleeve 20*a* to a distance only sufficient to provide a rugged construction. The upper portion of a hinge post 11*a* is provided with a socket 29 into which the pin 28 may extend to provide a pivotal connection between the hinge post and the seat. A projection 25*a* extends from the post 11 and has a surface 26*a* which cooperates with the stop 22*a*. It will be noted that the end 30 of the pin 28 is spherical in form and may be undercut as at 31. The foregoing arrangement of the pin and socket provides for the necessary relative movement therebetween when the opposite hinge is disconnected and the seat is swung away from the opposite hinge post and at the same time the pin 28 is swung at an angle to the socket 29 and ready for withdrawal therefrom. To obviate possible confusion on the part of the reader attention is called to the fact that the construction shown in Fig. 3 is adapted for a seat which swings in the opposite direction from that for which the hinge shown in Fig. 2 is adapted; or in other words it is the construction of a right hand hinge post instead of a left hand hinge post.

I claim as my invention:

1. In a water closet, a bowl, a toilet seat having sockets in the lateral edges thereof, a pair of hinge posts positioned at the sides of said seat near the rear thereof and secured to said bowl and having pins extending therefrom toward said seat and into said sockets, one of said pin and socket connections having concealed means for limiting the rotative movement between said seat and posts.

2. In a water closet, a bowl, a toilet seat having sockets in the lateral edges thereof, a pair of hinge posts positioned at the sides of said seat near the rear thereof and secured to said bowl and having pins extending therefrom toward said seat and into said sockets, an annular portion for one of said pins positioned adjacent the hinge post, a projection on said portion, and a stop adjacent the socket for cooperation with said projection to limit the rotative movement between said seat and said post.

In testimony whereof I affix my signature.

WILLIAM A. CARMICHAEL.