Jan. 25, 1927. 1,615,574

W. J. DENNIS ET AL

CLOSET HOPPER SEAT HINGE

Filed Dec. 18, 1925

Fig. 1.

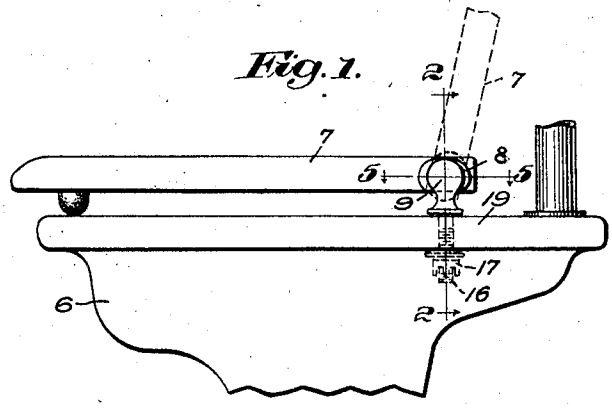


Fig. 2.

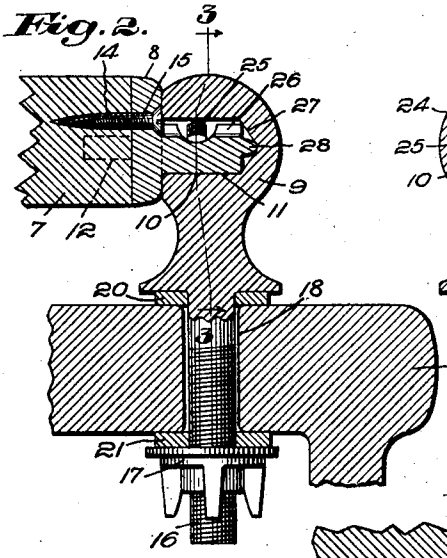


Fig. 3.

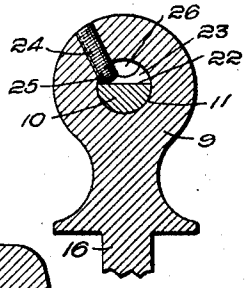


Fig. 4.

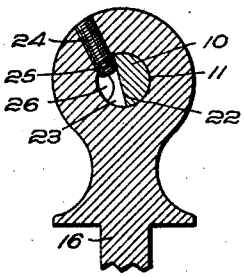
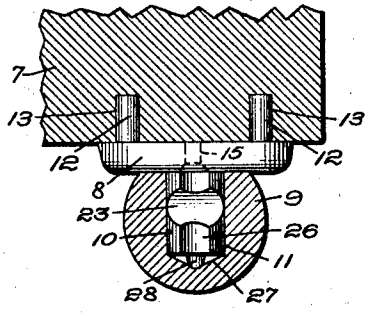


Fig. 5.



Inventors:
William J. Dennis,
John S. Perry,
by Emery, Booth, Janney & Varney
Attys.

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UNITED STATES PATENT OFFICE.

WILLIAM J. DENNIS, OF PONEMAH, AND JOHN S. PERRY, OF NASHUA, NEW HAMPSHIRE, ASSIGNORS TO NASHUA BRASS COMPANY, OF NASHUA, NEW HAMPSHIRE, A CORPORATION OF NEW HAMPSHIRE.

CLOSET-HOPPER-SEAT HINGE.

Application filed December 18, 1925. Serial No. 76,189.

This invention relates to a closet hopper seat hinge, having a novel means to limit relative angular movement of the hinge members, and to prevent their accidental axial separation.

The invention will be best understood by reference to the following description, when taken in connection with the accompanying drawings of one specific embodiment thereof, while its scope will be more particularly pointed out in the appended claims.

In the drawings:

Fig. 1 is a side elevation of a portion of a closet hopper and seat, equipped with a hinge exemplifying the invention;

Fig. 2 is a sectional view on an enlarged scale on line 2—2 of Fig. 1;

Fig. 3 is a sectional view on line 3—3 of Fig. 2, looking in the direction of the arrows on said line;

Fig. 4 is a sectional view similar to Fig. 3, but showing the pivot in the position which it occupies when the seat is raised; and

Fig. 5 is a sectional view on an enlarged scale on line 5—5 of Fig. 1.

Referring to the drawings, and to the embodiment of the invention which is selected for exemplification, there is shown a portion of a closet hopper 6, and a seat 7, which is pivotally mounted on the hopper by a pair of hinges exemplifying the invention.

One of the hinges will now be described, reference being had at first to Fig. 2. The hinge comprises two hinge members 8 and 9, one presenting a pivot 10 and the other a bearing 11, in which the pivot turns. The hinge member 8, in the present example, is secured to the seat, as by being provided with integral dowels 12 (see Fig. 5), received in holes 13 provided therefor in the seat, and a screw 14 (see Fig. 2), which extends through a hole 15 in the hinge member, and is threaded into the seat. The hinge member 9, in this instance, presents a shank 16, threaded to receive a nut 17. The shank extends through a hole 18 provided in a flange 19 presented by the hopper. Rubber cushioning washers 20 and 21, one above the other below the hopper flange, prevent injury to the latter by the clamping action of the screw and nut.

Relative angular movement of the hinge members, when the seat 7 is raised from the normal position shown in full lines in Fig. 1 to the position shown in dotted lines therein, is limited by a movable stop presented by the pivot, and a fixed stop presented by the bearing. Referring to Figs. 3 and 4, the pivot 10 presents an abutment 22, herein the bottom of a transverse groove 23 formed therein (see Fig. 5), while the fixed stop is presented by a pin 24, conveniently mounted in the bearing member, as by threading the same into the latter (see Figs. 5 and 4). The inner end of the screw affords an internal projection 25, normally received in the transverse groove 23. The screw is inclined with relation to a radial line passing through the pivotal axis of the hinge members, and in the direction toward which the thrust is exerted when the movable stop 22 strikes the fixed stop (see Fig. 4). The angular position of the screw is such that the shock does not tend to loosen it.

Accidental axial displacement of the hinge members, as when the shank 16 becomes loosened in the hopper flange, is prevented by reason of the interengagement of the hinge members afforded by the location of the projection 25 in the transverse groove 23 (see Fig. 2). Intentional separation and reassembling of the hinge members can be accomplished when the parts are in a certain predetermined position, by the provision of a longitudinal groove or recess 26 (see Fig. 5) of sufficient width and depth to receive the projection 25 when the latter is in registration therewith. When the parts are so positioned, the pivot can be withdrawn from its bearing, inasmuch as the projection 25 will pass through the longitudinal groove or recess 26. Unless the parts are in the position in which this registration takes place, accidental relative, axial displacement of the hinge members is impossible. It should be understood, of course, that in practice, after the screw 24 is put in place, there is no intention of ever removing the screw, and it is therefore cut off flush with the external surface of the hinge member 9, and the latter is coated with enamel, which hides the outer end of the screw.

Owing to the small dimensions of the parts, the screw 14 is placed relatively near the axis of rotation of the hinge members (see Fig. 2), and under these circumstances, the groove 26 affords a channel for the in-

troduction of the screw into the hole 15, the groove 26 to this end being extended across the recess 23, and being of sufficient size to permit the screw head to pass therethrough into its place. The groove, moreover, provides ample working space for a screw-driver in turning the screw into place. The bearing 11, in the present example, is conveniently formed by drilling the hole part way through the hinge member 9, the end of the drill leaving a conical depression 27, which receives a projection 28 presented by the adjacent end of the pivot 10, thereby accurately centering the latter.

Having thus described one embodiment of our invention, but without limiting ourselves thereto, what we claim and desire by Letters Patent to secure is:

1. A device of the class described comprising, in combination, a pivot and a bearing therefor, said pivot presenting an abutment constituting a movable stop, and a pin held by said bearing and presenting a fixed stop cooperating with said moveable stop to limit angular movement of said pivot, said pin being inclined relative to a radial line and in the direction toward which the thrust is exerted when said movable stop strikes said fixed stop.

2. A device of the class described comprising, in combination, a pivot and a bearing therefor, said pivot presenting an abutment constituting a movable stop, and a pin threaded into said bearing and presenting a fixed stop cooperating with said movable stop to limit angular movement of said pivot, said pin being inclined with relation to a radial line and in the direction toward which the thrust is exerted when said movable stop strikes said fixed stop.

3. A device of the class described comprising, in combination, a pivot and a bearing in which said pivot is mounted to turn, said bearing presenting an internal projection and said pivot presenting a recess in which said projection is received, whereby accidental axial separation of said pivot and said bearing is prevented, said pivot presenting an abutment which limits turning movement of said projection about the pivotal axis of said pivot.

4. A device of the class described comprising, in combination, a pivot and a bearing in which said pivot is mounted to turn, said bearing presenting an internal projection and said pivot presenting a transverse recess in which said projection is normally received and a longitudinal recess leading from said transverse recess to permit axial separation of said pivot and said bearing when said projection registers with said longitudinal recess, said pivot presenting an abutment which limits turning movement of said projection about the pivotal axis of said pivot.

In testimony whereof, we have signed our names to this specification.

WILLIAM J. DENNIS.
JOHN S. PERRY.