No. 646,613. Patented Apr. 3, 1900.

G. T. WILSON.

FRICTION HINGE.

(Application filed Nov. 16, 1899.)

(No Model.) 2 Sheets—Sheet 1.

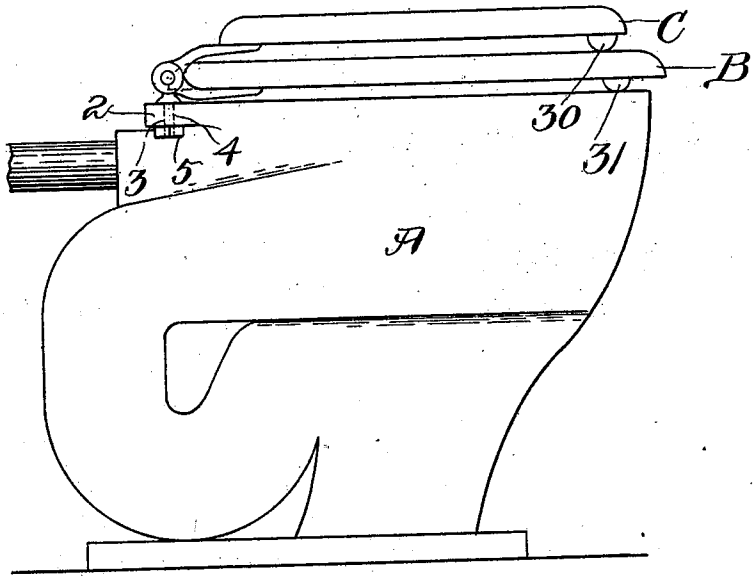


Fig. 1.

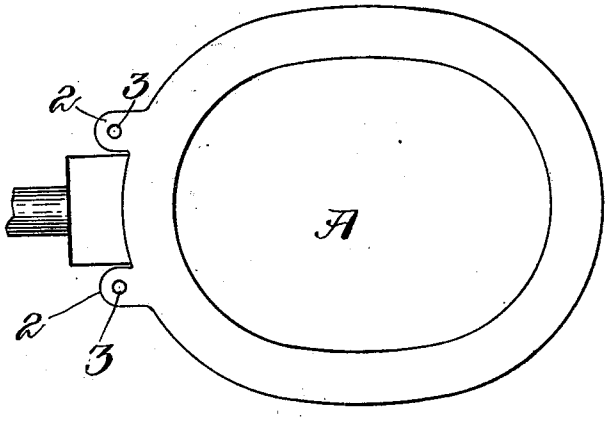


Fig. 2.

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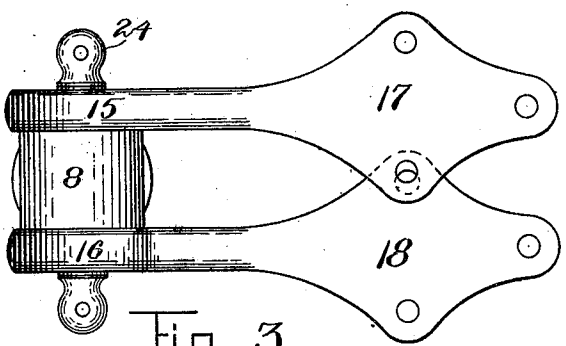


Fig. 3.

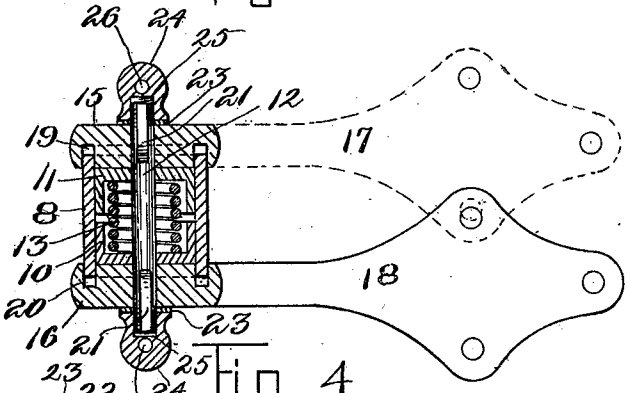


Fig. 4

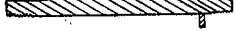


Fig. 6.

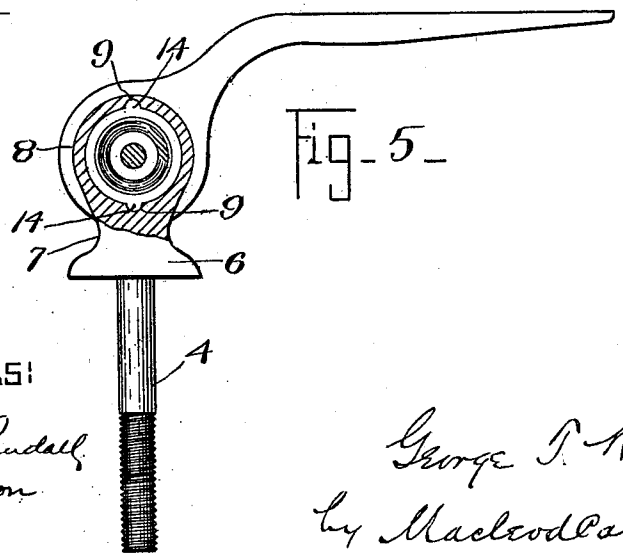


Fig. 5.

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UNITED STATES PATENT OFFICE.

GEORGE T. WILSON, OF SOMERVILLE, MASSACHUSETTS, ASSIGNOR TO FRANK W. WEBB, OF BOSTON, MASSACHUSETTS.

FRICTION-HINGE.

SPECIFICATION forming part of Letters Patent No. 646,613, dated April 3, 1900.

Application filed November 16, 1899. Serial No. 737,156. (No model.)

To all whom it may concern:

Be it known that I, GEORGE T. WILSON, a citizen of the United States, residing at Somerville, in the county of Middlesex, State of Massachusetts, have invented a certain new and useful Improvement in Friction-Hinges, of which the following is a specification, reference being had therein to the accompanying drawings.

Many articles which are made from stoneware, porcelain, or the like are provided with covers or other parts which are of wood or similar material and are hinged to the porcelain. A water-closet bowl affords an illustration of the class of articles to which I refer. The bowl or hopper of the closet is frequently of porcelain, while the seat and cover are of wood and are secured in place on the hopper by means of hinges. Porcelain or stoneware, as is well known, is quite easily cracked or fractured, and if the wooden portion of the article—as, for example, the seat of the closet—is allowed to fall on the porcelain portion it not infrequently happens that the latter is damaged.

My invention has for its object to provide a hinge for such articles, and more especially for water-closet seats or covers, which will prevent the falling of the seat or cover, and thus eliminate the danger of injuring the porcelain hopper resulting therefrom.

In the following description, in which reference is made to the accompanying drawings, I have fully set forth the nature and character of my invention and in the claims at the close of this specification I have pointed out and clearly defined the novel features thereof.

Referring to the drawings, Figure 1 is a side elevation of a water-closet bowl with a hinge embodying my invention applied thereto. Fig. 2 is a plan view of the porcelain bowl shown in Fig. 1. Fig. 3 is a plan view, Fig. 4 is a horizontal sectional view, and Fig. 5 is an elevation, partly in section, of a hinge embodying my invention. Fig. 6 is a detail hereinafter referred to.

A hopper or bowl of porcelain or similar fragile material is shown at A. The seat is shown at B and the cover at C. Projecting lugs 2 are formed at the rear upper portion of the said hopper A, each of which has a vertical hole 3 formed therethrough for the reception of the shank 4 of one member of the hinge. The shank 4 is secured in position in the hole 3 by means of a threaded nut 5, which is screwed onto the threaded portion of the shank 4 underneath the projecting lug 2, as will be clear from Fig. 1.

The hinge proper (shown more clearly in Figs. 3 to 6, inclusive) comprises a fixed member consisting of a shank portion 4, screw-threaded at its lower end to receive the nut 5 and having a shouldered head 6, which rests upon the upper surface of the lug 2 and forms a base from which projects upwardly a neck portion 7, which carries a horizontal and preferably cylindrical portion 8. The cylindrical portion 8 has oppositely-placed interior grooves or recesses formed lengthwise thereof. Within the cylinder 8 are two flanged disks 10 and 11, the flanged portions of said disks forming inwardly-extending short cylinders or rings when the said disks are in position in the cylinder 8, as shown in Fig. 4. Each of the disks 10 and 11 has a central opening, through which the pin 12, which secures the parts of the device together, may pass. Surrounding the said pin 12 and within the cavity or space formed by the flanged disks is a spiral spring 13, which tends to separate the said disks 10 and 11. Each of the disks is provided with oppositely-placed projections 14 lengthwise of the flange portion thereof, (see Fig. 5,) which fit within the grooves or recesses 9, as shown, and serve to prevent the disks from turning relatively to the cylindrical portion 8. At each end of the cylindrical portion 8 are placed heads 15 and 16, respectively, which are, in effect, rounded bosses or knuckles rigidly connected with and in the embodiment of the device herein described formed integral with the straps 17 and 18, respectively. These latter are the movable portions of the hinge in the application thereof which is being described. The parts 17 and 18 are provided with holes for the reception of screws which form one convenient method of securing the said straps to the parts which are to be mounted on the hinge, which are in this case a lid C and seat B. The inner faces of the bosses or knuckles

15 and 16 are each provided with an annular groove or recess 19 and 20, respectively, into which the ends of the cylindrical portion 8 are received, as shown in Fig. 4. The grooves 19 and 20 are preferably somewhat deeper than the projecting ends of the cylindrical portion 8, so that the straps 17 and 18 and the parts which are connected therewith may be moved slightly lengthwise of the cylindrical portion 8, thus permitting a slight horizontal adjustment of the portion 8 should that be desired. A slight adjustment of this kind is frequently necessary or desirable because two hinges are usually employed in connection with bowls or hoppers of the kind shown in Figs. 1 and 2. One of said hinges is placed on each of the lugs 2, the shank 4 of the hinge being placed in the hole 3 formed in the said lug 2. The holes 3 are formed when the bowl or hopper is in process of construction, and it frequently happens that in heating or baking the porcelain bowl the distances between the holes 3 will be slightly varied by the expansion or contraction of the material or the like. The lengthwise movement above referred to of the cylindrical portion 8 relatively to the bosses or knuckles 15 and 16 permits the adjustment of the hinges to a slight variation in the distance apart of the holes 3, thereby permitting the straps 17 and 18 to be secured to the lid C and seat B before the said lid and seat are attached to the bowl or hopper, as is desirable and convenient.

The bosses or knuckles 15 and 16 are each provided with a central hole through which the pin 12 passes, and when the parts of the hinge are assembled the inner faces of the said bosses 15 and 16 are in frictional contact with the proximate faces of the flanged disks 11 and 10, respectively. The pin 12 is grooved or slotted at each end lengthwise thereof, as shown at 21, (see Figs. 4 and 6,) the said slots being provided for the reception of an inward projection 22 on each of the washers 23. The ends of the pin 12 are screw-threaded, and the portions thereof which project outside the bosses or knuckles 15 and 16 when the parts of the device are assembled receive the washers 23 and outside the said washers a nut 24. Each of the nuts 24 is provided with a threaded recess 25 of greater depth than the length of the projecting portion of the pin 12. The nuts 24 are provided with rounded heads or ends for the purpose of finish and ornament, the said form not being essential to my device. When the nuts are so formed, they are provided, preferably, with holes 26 for the reception of a pin or similar device, by means of which the said nuts may be turned in the process of screwing them on or off the ends of the pin 12. The projections 22 on the washers 23, which lie in the grooves 21 of the nut 12 serve to prevent the said washers from turning relatively to the said pin, which is desirable. When the parts of the device are assembled, the bosses or knuckles 15 are restrained from free movement on the pin by the frictional contact of their inner faces with the flanged disks 11 and 10, respectively, and this friction, as will be clear, may be increased as desired by screwing the nuts 24 farther onto the ends of the pin 12. By thus setting up the nuts 24 the bosses or knuckles 15 and 16, respectively, are forced nearer together, and these in turn force the flanged disks 11 and 10 toward each other, compressing the spring 13 and causing the said spring to exert a greater pressure, and thereby to hold the flanged disks 11 and 10 more firmly against the inner faces of the bosses or knuckles 15 and 16, respectively. This arrangement of parts secures an even tension or friction, since the spring 13 will serve to take up any wear between the frictional surfaces.

The shank portions of the straps 17 and 18 are bent upwardly and downwardly, respectively, as will be clear from Fig. 1, so as to bring the upper surfaces of the said straps into the planes, respectively, of the under sides of the lid C and seat B. The lid C may be provided in the well-known manner with one or more rubber buttons or buffers 30, which serve to hold it out of contact with the seat B, and in the same way the said seat may be held out of contact with the top of the porcelain bowl or hopper by means of one or more rubber buttons or buffers 31.

In the embodiment of my invention hereinbefore described two straps are shown. It will be clear that only one such strap may be employed without departing from my invention. In such case the boss or knuckle at one end of the cylindrical portion 8 may be simply a disk or head of metal secured to the said cylindrical case or portion 8, while the pin 12 would have at one end, preferably, a rigid head instead of a nut.

As will be clear, the straps or securing portions of the members of the hinge may be varied in accordance with the use for which the hinge is required.

By the employment of my device any degree of friction desired may be obtained, and thus the device is adapted for supporting and holding at any angle a cover or seat or similar part whether the said part be heavy or light.

What I claim is—

1. A friction-hinge comprising a hollow member or case, a disk within said member movable longitudinally therein, a spring engaging said disk, another member rotatable relatively to said hollow member, and in frictional contact with said disk, and means for securing the said parts together with varying degrees of pressure at the friction-surfaces, substantially as described.

2. A friction-hinge comprising a hollow member, a disk within said member movable longitudinally therein, a spring engaging said disk, another member rotatable relatively to said hollow member and in frictional contact with said disk, means for securing said parts together comprising a pin passing centrally

through said disk and said rotatable member and a threaded nut on said pin, substantially as described.

3. A friction-hinge comprising one member having a hollow cylindrical portion, two flanged disks located within said cylindrical portion and movable longitudinally therein, a spring between said disks which tends to force the said disks apart, a boss or knuckle at each end of said cylindrical portion, each boss or knuckle being in frictional contact with one of said disks and means for securing the said parts together and for varying the said frictional contact as desired, substantially as described.

4. A friction-hinge comprising one member having a hollow cylindrical portion, a spring-pressure device within said cylindrical portion, and movable longitudinally thereof, a boss or knuckle at each end of said cylindrical portion, said bosses or knuckles being frictionally restrained by said spring-pressure device, an annular recess or groove in each boss or knuckle into which one end of said cylindrical portion projects and is movable therein and means for securing the said parts together, substantially as described.

5. A friction-hinge comprising one member having a hollow cylindrical portion or case, and two other members one at each end of said cylindrical portion and rotatable relatively to the latter, a spring-pressure device located within said hollow cylindrical portion and exerting a pressure on each of said rotatable members, and means for securing said parts together, comprising a pin which passes through said rotatable members and is provided at each end with a screw-nut whereby by turning the said nuts the rotatable members may be forced toward each other against the pressure of the interposed spring-pressure device and the friction varied as desired, substantially as described.

6. A friction-hinge comprising a hollow cylindrical member, two disks within said member, means as the recess 9 and projection 14 for preventing said disks from rotating relatively to said cylindrical portion while permitting their movement longitudinally thereof, a spring interposed between said disks, a rotatable boss or knuckle at each end of said cylindrical portion, the movement of said bosses or knuckles being restrained by the pressure of said spring, and means consisting of the pin 12 and nuts 24 for securing said parts together, substantially as described.

7. A friction-hinge comprising a hollow member or case, two disks within said case, a spring interposed between said disks and engaging the latter, a rotatable boss or knuckle at each end of said case, a securing-pin and nuts thereon for securing said parts together, each end of said pin being slotted lengthwise thereof and having a washer thereon provided with a projection engaging said slot, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

GEORGE T. WILSON.

Witnesses:

WM. A. MACLEOD,

ALICE H. MORRISON.