J. W. SPALDING.

WATER CLOSET ATTACHMENT.

APPLICATION FILED SEPT. 1, 1909.

953,302. Patented Mar. 29, 1910.

Fig. 1.

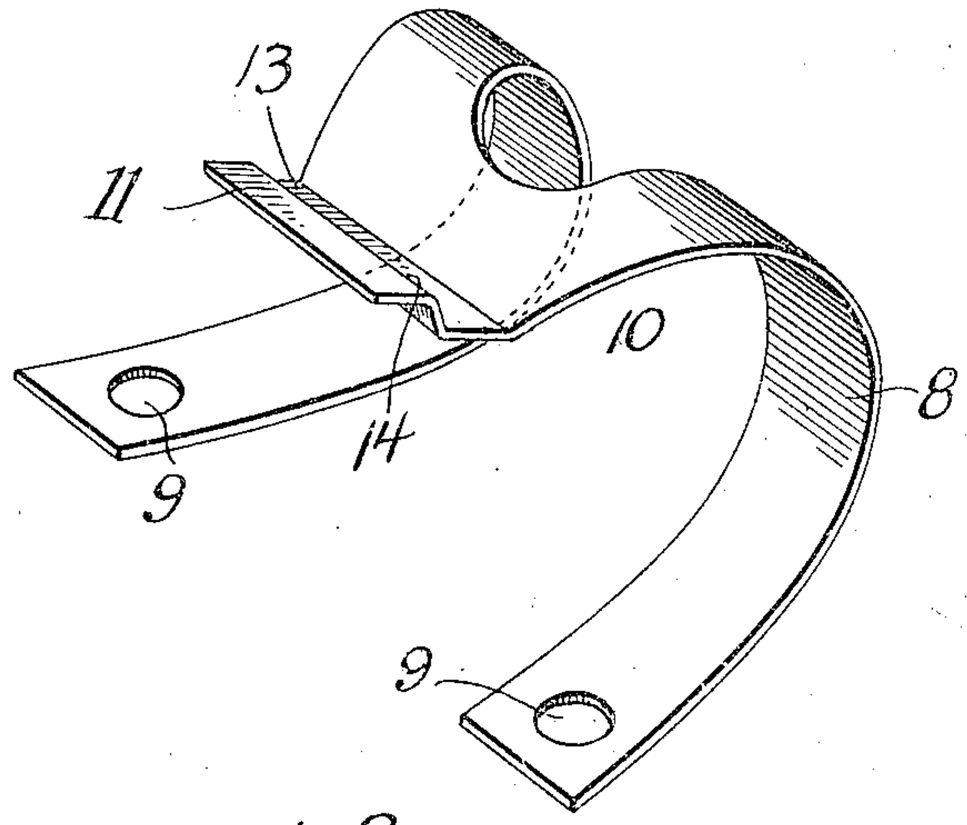


Fig. 2.

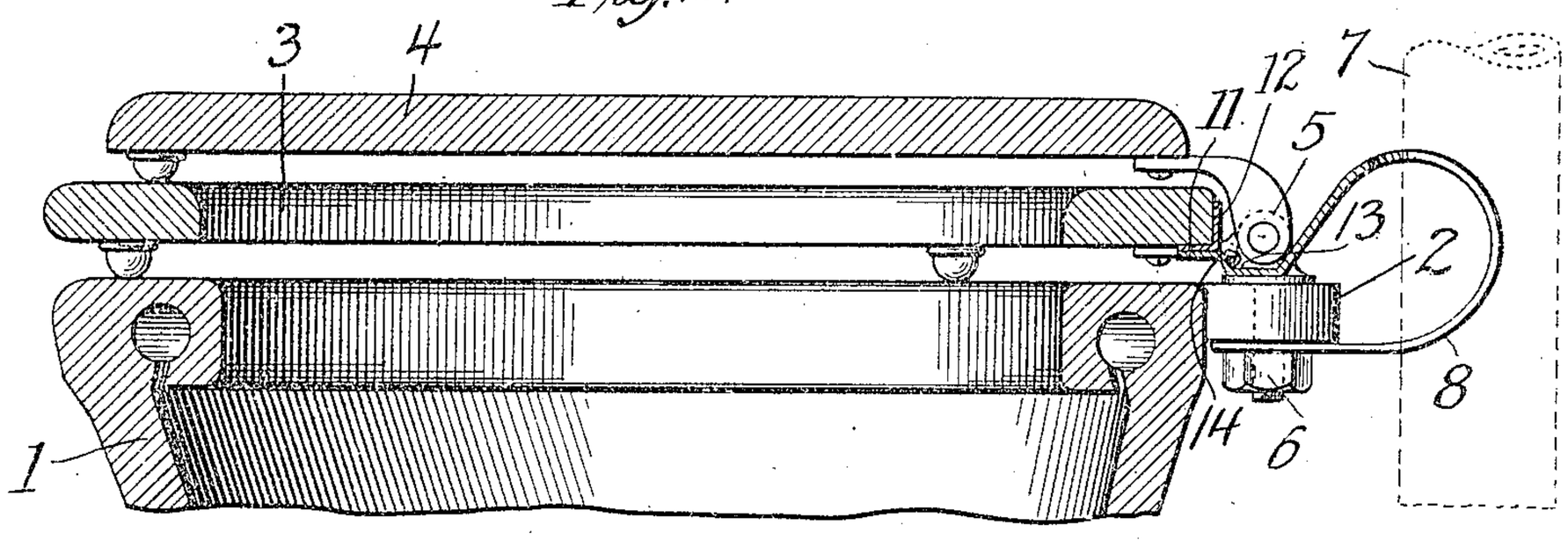
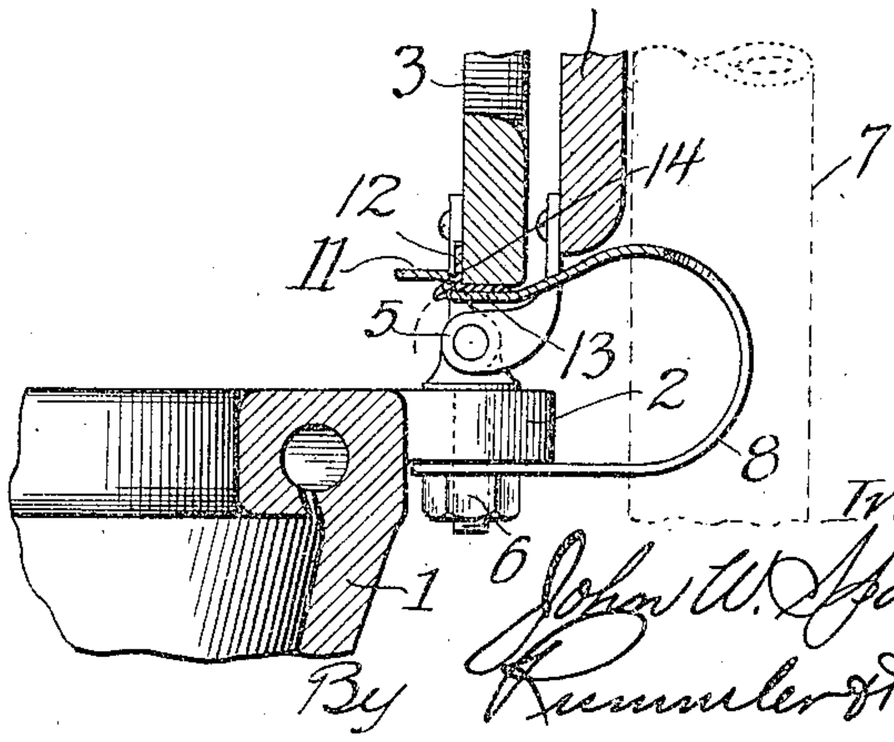


Fig. 3.



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UNITED STATES PATENT OFFICE.

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WATER-CLOSET ATTACHMENT.

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Application filed September 1, 1909. Serial No. 515,624.

To all whom it may concern:

Be it known that I, JOHN WILLIAM SPALDING, a citizen of the United States of America, and a resident of Aurora, county of Kane, State of Illinois, have invented certain new and useful Improvements in Water-Closet Attachments, of which the following is a specification.

The main objects of this invention are to provide an improved attachment for water-closets, particularly adapted for retaining the seat of the closet in an open position and for yieldingly resisting the closing of the seat throughout its entire range of movement so as to prevent injury to the bowl of the closet through violent closing of the seat; and to provide an improved form of spring for this purpose which is so formed as to be readily attachable to the hinge fittings of water closets of ordinary construction without requiring modification of the hinge fittings or special means for securing the spring, and without requiring cutting or other alteration of the closet seat to accommodate the spring, thereby avoiding the necessity of employing a skilled workman for the purpose of attaching the spring.

Water-closets are frequently broken on account of violent closing of the seat, especially in railroad trains, where the seats are frequently left in an open position by passengers and are then caused to fall to a closed position by swaying or lurching of the train. It is therefore important to provide means, not only for holding the closet seat in its open position and preventing the accidental closing thereof, but also for yieldingly resisting the closing of the seat so as to prevent shock to the bowl. The resisting means should, however, be so arranged that it will not prevent the weight of the seat from holding it in a fully closed position.

The foregoing objects are accomplished by the device shown in the accompanying drawings, which illustrate a specific embodiment of this invention.

Figure 1 is a perspective view of a water-closet seat spring of suitable form to carry out the purpose of this invention, and adapted for attachment to the ordinary form of water-closet. Fig. 2 is a vertical section of the upper part of a water-closet fitted with a spring like that shown in Fig. 1. Fig. 3 is a similar view, showing the seat and lid in an open position and illustrating the manner in which they are held in an open position by the spring.

The water-closet shown in the drawings is of usual construction, comprising a bowl 1, having lugs 2 at its rearward edge, to which the members 3 and 4, hereinafter respectively referred to as the seat and lid, are fastened by means of hinge fittings 5, which fittings usually comprise a pair of studs or bolts spaced apart and extending through the lugs 2, and being held in position by means of nuts 6 below the lugs. In the usual form, the hinges are arranged substantially as shown in the drawings, and the rearward edge of the seat is located a considerable distance in front of the axis of the hinges. There is also usually a service pipe 7, which extends upwardly close behind the bowl.

In the form shown, the attachment is in the form of a bowed leaf spring 8 bent to substantially U-shape, and divided for the greater part of its length into two parts, each of which is provided near its lower end with an aperture 9 for engaging the hinge bolts. The opening 10 in the spring is of sufficient width and extent to clear the service pipe 7 behind the closet. The free end 11 of the spring is reduced in width and is shaped to engage the seat 3, as shown in Figs. 2 and 3. The surface of the seat 3 which comes into contact with the spring is protected by a bent wear-plate 12. The end portion 11 of the spring is also bent to form a transverse groove or seat 13, shaped to fit the lower edge of the seat when it is in its lifted position, as in Fig. 3, and this groove has an abrupt shoulder 14 at its front edge which engages the middle corner of the wear-plate 12, as shown in Fig. 3, and prevents accidental closing of the seat and lid.

In operation, the free end 11 of the spring at all times extends under the seat 3. When the seat and lid are closed, the spring bears upon the seat in the manner shown in Fig. 2, and when they are lifted it engages them as in Fig. 3. The strength of the spring is such that it will securely hold the seat and lid when lifted, and will return them to a lifted position even when tilted forward at a considerable angle from their upright po-

sition. When, however, they are tilted forward beyond a certain inclined position, the weight of the seat and lid acts at greater leverage and the spring yields and permits them to close.

The dotted arc in Fig. 3 indicates the direction in which the corner of the wearplate moves when the seat is swung toward a closed position. It will be seen that the shoulder 14 of the spring causes the spring to be not only depressed, but pulled forward by the shoulder on the wearplate. This enables the spring to return the seat and lid to their opened position from any forwardly inclined position at which the shoulder 14 remains in engagement with the corner of the wearplate. After the shoulder 14 has passed out of engagement with this corner, as is the case when the seat and lid are close to their closed position, the spring no longer exerts a backward pull, but merely an upward pressure and the leverage of the weight of the seat and lid is applied at the extreme end of the spring. Under these circumstances, it is possible to make the spring of such strength that it will allow the seat and lid to rest completely closed, but will also have sufficient strength to safely hold the seat and lid open.

Although but one specific embodiment of this invention is herein shown and described, it will be understood that numerous details of the construction shown may be altered or omitted, within the scope of the following claims, without departing from the spirit of this invention.

I claim:—

1. A device of the class described, comprising a bowed leaf spring adapted to be secured at one end and having its other end free and off-set to form a shoulder at a point near but inward from said free end.

2. The combination of a structure having a hinged member, a bowed leaf spring having one end secured to said structure adjacent to the hinges and having a free end extending into position to engage the hinged edge of said member, said free end being arranged to bear upon said member at one side of the axis of the hinges and being adapted to hold said member in an open position, said spring being of such strength and form as to yield to permit said member to assume a substantially closed position by gravity when turned to a certain distance from its open position.

3. The combination of a structure having a hinged member, a bowed leaf spring having one end secured to said structure adjacent to the hinges and having a free end extending into position to engage the hinged edge of said member, said free end being arranged to bear upon said member at one side of the axis of the hinges and normally urging said member to an open position, said spring being of such strength and form as to yield to permit said member to assume a substantially closed position by gravity when turned to a certain distance from its open position, and a shoulder formed on said spring and adapted to engage said member for securing it against accidental dislodgment from its open position.

4. The combination of a structure having a hinged member, a bowed leaf spring having one end secured to said structure adjacent to the hinges and having a free end extending into position to engage the hinged edge of said member, said free end being arranged to bear upon said member at one side of the axis of the hinges and normally urging said member to an open position, said spring being of such strength and form as to yield to permit said member to assume a substantially closed position by gravity when turned to a certain distance from its open position, the free end of said spring being bent to form a shoulder adapted, when in engagement with the rearward edge of said member, to yieldingly retain said member in a predetermined open position.

5. The combination of a structure having a hinged member, a bowed leaf spring having one end secured to said structure adjacent to the hinges and having a free end extending into position to engage the hinged edge of said member, said free end being arranged to bear upon said member at one side of the axis of the hinges and being adapted to hold said member in an open position, said spring being of such strength and form as to yield to permit said member to assume a substantially closed position by gravity when turned to a certain distance from its open position, a shoulder formed on said spring and adapted to engage said member for securing it against accidental dislodgment from its open position, and a wearplate secured to said member and having a shoulder adapted to coact with the shoulder on said spring.

6. In a water-closet, the combination with a closet bowl having a lug for seat hinges, and a seat hinged to said lug, of a bowed leaf spring having one end secured to said lug and having a free end bearing upon the lower side of said seat, said spring being adapted to exert an upward pressure on said seat at a point outside of the axis of the hinge and being of such strength and form as to urge said seat toward an open position throughout a considerable range of the movement of said seat, and to yield and permit the closing of said seat by gravity when said seat is swung forward so as to approach its closed position.

7. An attachment for water-closets, comprising a bowed leaf spring having one end

bent to form a shoulder extending transversely across its outer face, and having its other end divided into two parts spaced from one another, and from said shouldered end and adapted for separate attachment to the water-closet structure.

8. In a water-closet, the combination of a bowl, a seat hinged thereto at the back, an upright service pipe behind the bowl and a bowed leaf spring having one end secured at the back of the bowl and having its other end free and bearing upon the seat in front of the axis of the hinges, the bowed part of said spring between its ends being divided into two parts located at respectively opposite sides of said service pipe.

9. The combination with a water-closet bowl and seat hinged together at the back, of a bowed leaf spring having one end secured at the back of the bowl and having its other end free and bearing on the seat, coacting shoulders on said seat and spring adapted when engaged to retain the seat in a certain open position, and said spring having an end part adapted to engage the seat and separate said shoulders when the seat is moved toward its closed position.

10. The combination with a water-closet bowl and seat hinged together at the back, of a bowed leaf spring having one end secured at the back of the bowl and having its other end free and bearing on the seat, coacting shoulders on said seat and spring adapted when engaged to retain the seat in a certain open position, and coacting surfaces on said spring and seat adapted to guide said shoulders into engagement when said seat approaches an open position and to separate said shoulders to allow the spring to slip to reduce its lifting effect on the seat when the seat approaches its closed position.

Signed at Chicago this 30 day of August 1909.

JOHN W. SPALDING.

Witnesses:
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