UNITED STATES PATENT OFFICE.

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SPRING-SUPPORTED POST.

SPECIFICATION forming part of Letters Patent No. 635,709, dated October 24, 1899.
Application filed January 19, 1899. Serial No. 708,726. (No model.)

To all whom it may concern:

Be it known that I, FRED ANDREW, a citizen of the United States, residing at Watseka, in the county of Iroquois and State of Illinois, have invented certain new and useful Improvements in Spring-Supported Posts, of which I do hereby declare the following to be a full, clear, and exact specification, such as will enable others skilled in the art to which this invention appertains to make and use the same.

My invention relates to spring-cushioned sliding posts or rods, and more particularly to spring-seat posts for cycles, although applicable to other uses wherein it is required to elastically support a weight or other pressure.

In many devices employing spring-cushioned sliding rods or posts the tube, cylinder, or other container in which the rod or post slides is necessarily or desirably out of alinement with the line of the pressure upon the rod or post, and hence when the post and spring are concentric with the container force due to the pressure on the post will meet the spring and tube at an angle from a straight line and produce a frictional binding force between the spring and container and post and container. This binding force is the resultant between the line of pressure upon the post and the line of opposing pressure of the spring. To overcome this binding resultant, an equal force must be opposed thereto acting in a direction that will tend to carry the spring and post into alinement with the line of pressure on the post, and thereby afford the spring a free, yielding, resisting, and return action under the pressure, unimpeded by frictional resistance.

In the case of a bicycle-saddle owing to the angle formed by the direct weight of the rider and the slant of the seat-post tube, the weight of the rider acting against the upward thrust of the supporting-spring, a resultant force is produced at the point o in Fig. 5 of the drawings, forcing the supporting-post against the tube or the bearing fitted therein, causing friction and consequent binding against the tube. This binding and sticking of the post occurring when the bicycle is running upon an uneven roadway impart the shock of the jolt or jar caused by such roadway to the rider through the post, thus totally destroying the efficiency of the device.

The object of my invention is to greatly lessen or wholly prevent the frictional binding referred to, allowing the post to slide smoothly in its tube or bearing; and to this end the invention consists of means to produce a force equal and opposed to the said resultant binding force.

In the accompanying drawings, which illustrate the application of my invention to the saddle-post of a bicycle, Figure 1 is a side view in elevation, partly in section, of the invention. Fig. 2 is a detail rear view in elevation of the seat-post shell. Fig. 3 is a detail rear view, in vertical section, of seat-post shell. Fig. 4 is a side view in elevation of seat-post shell. Fig. 5 is a side view, in vertical section, of seat-post shell. Fig. 6 is a side view in elevation of means for applying the invention to a lady's wheel.

Throughout the several figures like letters of reference denote the same parts.

Referring to the drawings, a supporting-rod or seat-post A is adapted to reciprocate longitudinally within a seat-post shell B, having end walls c d, which are provided with suitable openings. The shell B is cut, as indicated by lines x y z, Figs. 2 and 4, and is provided with bolts b b, adapted to draw the two resulting sections of said shell together, and thereby produce an enlargement where they wedge upon one another, thus firmly holding the shell within the seat-post tube or standard B' of the frame. The shell B and its means of engagement with the tube form no part of this invention; but any other suitable means of supporting and guiding the sliding seat-post within the tube may be provided. Supporting-post A is not placed concentric with shell B, but is inclined as much toward the perpendicular as is possible within the shell, thereby decreasing the angle formed by the direct weight of the rider and reducing the resultant force and consequent friction at point o, Fig. 5.

The seat-post A is supported upon spring C, and spring C in turn is not concentric with post A, but is seated upon wall d with the lower end of its axis forward of that of post A. The wall d is wedge-shaped to provide a base at right angles to and for said spring
and is also provided with a projection $d'$ to hold said spring in place. The upper end of spring C bears against a shoulder $e$, adjustable on post A with the upper end of its axis 5 back of that of post A and is held in place by projection $d'$ upon shoulder $e$. This eccentric arrangement of spring C exerts a force upon shoulder $e$ back of the axis of post A, thus tending to force post A to a perpendicular position. The other end of the spring bears in an opposite direction against the projection $d'$ of the shell, and the two forces at the ends of the spring thus form a couple which tends to rotate post A, forcing it toward the perpendicular and neutralizing the remaining resultant force at $a$, Fig. 5, allowing post A to slide freely and smoothly in its bearing with practically no friction at the same time that spring C supports the weight 20 of the rider. The upper end of post A is provided with an eye D, through which is passed a lever-bar E, pivoted at its front end to clamp F, which clamps the upper reach of a bicycle-frame. The clamp F may be moved to any desired point on the reach, thus allowing the leverage upon post A to be adjusted to the weight of the rider.

The lower end of post A may be tapered or beveled to permit more inclination and room for spring C, and the end of the post passes through the aperture $a$ in the wall $d$.

The mode of attaching the device to a lady’s wheel is shown in Fig. 6, the lever-bar E being pivoted at $b$ to support G and extending forward only to point $g$, its operation being practically the same as that of the device first described.

It is obvious that my invention is not limited in its application to bicycle saddle-posts alone, nor to the precise means herein shown and described for carrying into effect the invention, but that it may be applied to various uses, and numerous changes in the details of construction and the arrangement of parts may be made without departing from the principle of my invention.

Having thus described my invention, what I claim is—

1. In combination with a tube or similar containing means, a spring therein, a sliding 50 post in the tube, cushioned on said spring, said tube unalined with the line of pressure on the post, and said post inclined from the axis of said tube toward said line of pressure, substantially as described.

2. In combination with a pressure-sustaining post, a supporting spiral spring surrounding the post and applied to the post out of alinement with the axis thereof, tending to bring said post in alinement with the line of pressure on the post, substantially as described.

3. In combination with a seat-post, a container for said post in which the same reciprocates, a supporting-spring for said post having its opposite ends on opposite sides of the post and one end bearing against one end of the post and the other end against the container to produce a couple tending to bring said post into alinement with the line of pressure on the post, substantially as described.

4. In combination with a supporting-post to be applied to a tube or similar container unaligned with the force applied to the post, said post being inclined from the axis of said tube or container toward alinement with said line of force, a supporting-spring applied to said post out of alinement with the axis thereof tending to further incline said post toward alinement with said line of force, substantially as described.

5. In combination with the post-tube, a seat-post placed in said tube at an angle to the axis thereof and adapted to slide therein, a spiral supporting-spring in said tube applied to said post to produce a couple tending to increase the angle between the post and the axis of said tube, the axis of said spring also at an angle to the axis of said tube, substantially as and for the purpose described.

In testimony whereof I have hereunto set my hand and affixed my signature in the presence of two witnesses.

FRED ANDREW.

Witnesses:
B. CHANNEL,
F. K. WILSON.