

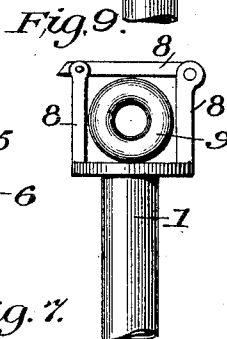
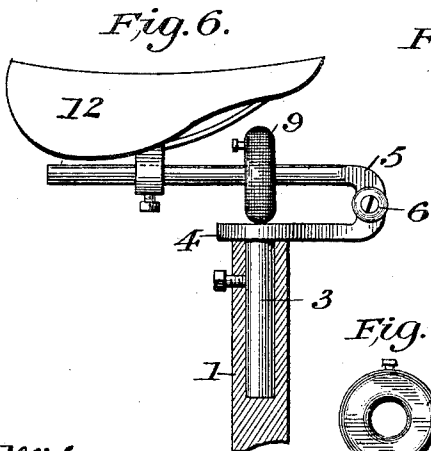
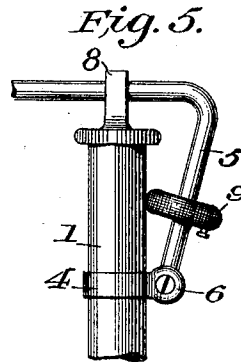
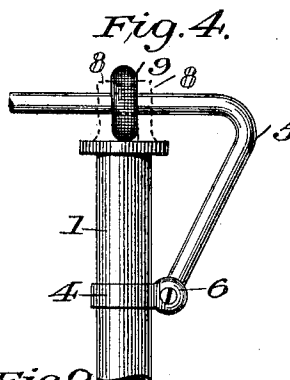
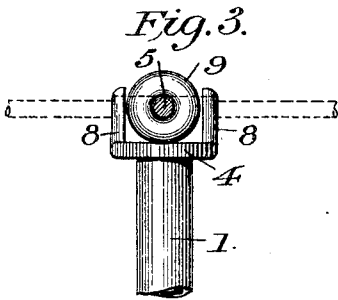
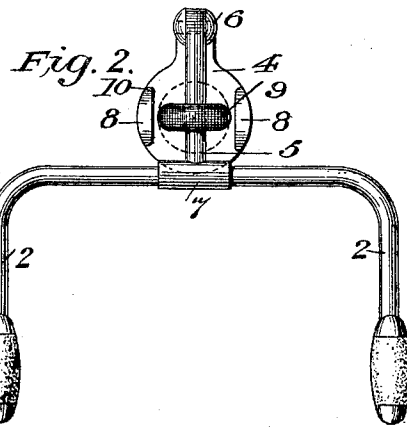
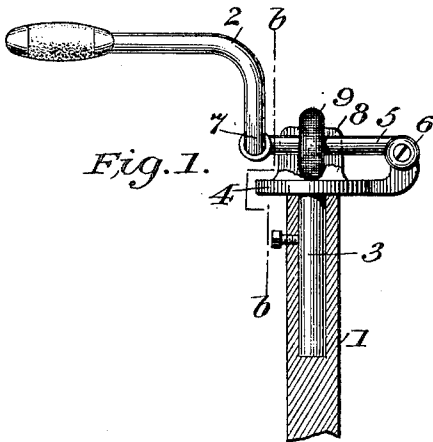
No. 674,864.

Patented May 28, 1901.

W. R. GREEN.
CUSHIONING DEVICE FOR VEHICLES.

(Application filed Sept. 12, 1898.)

(No Model.)



Witnesses.

I. L. Freeman
Harry E. Ayer.

Inventor
Willard R. Green

UNITED STATES PATENT OFFICE.

WILLARD R. GREEN, OF DENVER, COLORADO.

CUSHIONING DEVICE FOR VEHICLES.

SPECIFICATION forming part of Letters Patent No. 674,864, dated May 28, 1901.

Application filed September 12, 1898. Serial No. 690,775. (No model.)

To all whom it may concern:

Be it known that I, WILLARD REED GREEN, a citizen of the United States, residing at Denver, in the county of Arapahoe and State of Colorado, have invented certain new and useful Improvements in Cushioning Devices for Vehicles, of which the following is a specification.

My invention relates to improvements in pneumatic cushioning or antivibration devices for lessening or preventing jar or vibration of vehicles, as bicycles, from passing to the rider.

My invention consists in placing or introducing an independent integral detached pneumatic cushion or sack between the rider and the points of vibrating contact, as the handle-bars and the seat, preferably in the form of a ring to move or roll in all directions, with suitable means for retaining the same in operative position.

One object of the invention is to provide an article for such purpose of moderate cost and durable in character, with the wearing or perishable parts such as to be readily and easily renewable and substituted.

In the drawings forming a part of this specification, Figure 1 represents an elevation, partly in section, of the front portion of a bicycle-frame arranged according to my invention and showing one form of embodying the same. Fig. 2 is a plan view of Fig. 1. Fig. 3 is an elevation, partly in section, of parts of Fig. 1, taken on the line *b*. Fig. 4 is an elevation showing a similar arrangement as Fig. 1, but with the arm 5 modified to be differently attached to the frame 1. Fig. 5 is an elevation of a form the same as that shown in Fig. 4, but with the cushioning device placed in a different position. Fig. 6 shows a form of construction similar to that shown in Fig. 1 and adapted to the seat-frame of the bicycle. Figs. 7 and 8 show different forms of the cushioning device. Fig. 9 shows a form of the retaining parts of the frame adapted to resist upward pull or pressure in the handle-bars of a bicycle.

In the drawings, 1 represents the front post or frame of a bicycle of ordinary construction. An arm 4 is placed longitudinally upon the top of said post and is provided with a dowel 3, made integral therewith or fixed

thereto, and which dowel is held in position in said post by any ordinary means. The arm 4 has upon its forward extensions a hinge-joint 6, by which it is connected with the arm 5. Said hinge may be of ordinary form, connected by a pin, or may be of the ball form, with the usual clamping or tension device. The arm 5 is connected at its rearward extension by a joint 7 with the handle-bars 2, which are of ordinary form. Upon the arm 5, between the hinge-joint 6 and the handle-bars 2, is placed the cushioning device 9, constituting a part of this invention, which in this view is of the form represented by Fig. 7, but may be of other form, if desired.

It will be seen that the cushion 9 is penetrated by the arm 5 and loosely surrounds the same and that the cushion 9 rests upon the arm 4, which is flattened to form a resting-surface therefor, thus permitting the handle-bars to freely rise and fall by pressure upon or from the elasticity of the said cushion. The cushion 9 is adjustable on the arm 5, to and from the pivot of the latter, and is limited in its lateral movements by the guides 8, placed upon arm 4 and extending upward, as shown in Figs. 1 and 2. Said guides 8 may also be extended across the top of said cushion, if desired, to limit the upward movement thereof, as shown in Fig. 9.

It is obvious that pressure communicated to the arm 5 through the handle-bars or otherwise will be cushioned or limited in all directions through the elastic or yielding action of the pneumatic cushion 9 and that the degree thereof may be limited and adjusted by the position of the cushion on the arm 4 and by the degree of inflation of said cushion and the limits of extension permitted thereto by the guides 8 and the arm 4. It will be seen that the arm 5 passes through the recess or opening in the cushion and operates as an axis therein and can operatively engage and apply the elasticity of the cushion in directions radial to the axis.

It is evident that the elastic or cushioning effect resulting from this arrangement is not confined to that portion only of the cushioning device actually under compression between given compressing parts, but that the resilient effect of the entire body of the cushion and of the air contained therein is ob-

tained although said other parts are not themselves in contact with the compressing parts, also that the cushioning effect is obtained in all directions and that in the case of extending the guides 8 across the top of said cushion a cushioning effect is obtained upon an upward pressure of the handle-bars.

It will be observed that the form of the arms 4 and 5 may be altered and arranged, as shown in Fig. 4, to pass around and up the front of the frame of the vehicle without departing from the principles of the invention, also that the cushioning device may be placed upon the arm 5, so as to rest in front of the frame, as indicated in Fig. 5. The form of attaching or applying said device to the seat of a bicycle is shown in Fig. 6 and may be varied in manner similar to that in Figs. 4 and 5.

In form, construction, and material the cushion 9 will preferably resemble the pneumatic tire of a bicycle-wheel of ordinary construction and may partake of the usual varieties of the latter; but it may be of different forms, while permitting the passage of the arm 5 as U-shaped, as shown in Fig. 8.

While an embodiment of the invention has been described as applicable to bicycles, it is evident that the invention is equally suitable and adaptable to other vehicles and for other purposes where cushioning against vibration is desired and the resilient effect of a movable or moving cushion is desired. The advantages of this device in providing a resilient

effect in all directions and the obtaining of the same from all parts of the cushion and not only from the part actually between the compressing portions or parts in contact with said cushion are obvious.

I claim and desire to secure by Letters Patent—

1. In a vehicle, a cushioning device comprising an arm 4, and an arm 5, operatively connected, guides upon one of said arms between which the cushion is supported so as to be radially expansible in different directions, and a recessed cushion through which recess one of the arms extends as an axis permitting radial cushioning effect, in combination with vibrating parts of the vehicle, substantially as set forth.

2. In a cushioning device, the arm 4, the arm 5 connected to arm 4 by the hinge 6 and adapted to receive the cushion 9, in combination with the integral detachable recessed cushion 9, through which the arm 5 extends, the cushion adjustable on the arm 4 to and from the pivot of the arm 5, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

WILLARD R. GREEN.

Witnesses:

F. L. FREEMAN,
G. P. KRAMER.