No. 768,066. PATENTED AUG. 23, 1904.

A. P. MORROW.

CUSHION FRAME.

APPLICATION FILED DEC. 3, 1903.

NO MODEL.

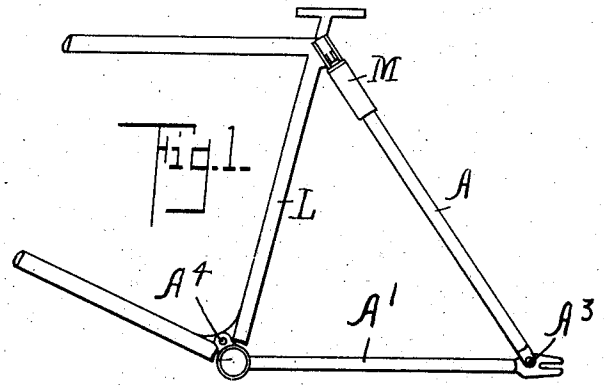

Fig. 1.

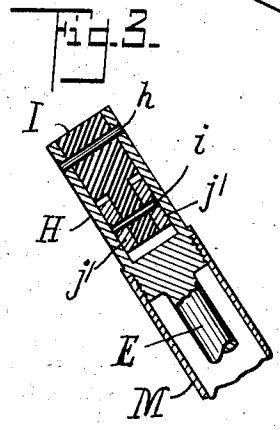

Fig. 3.

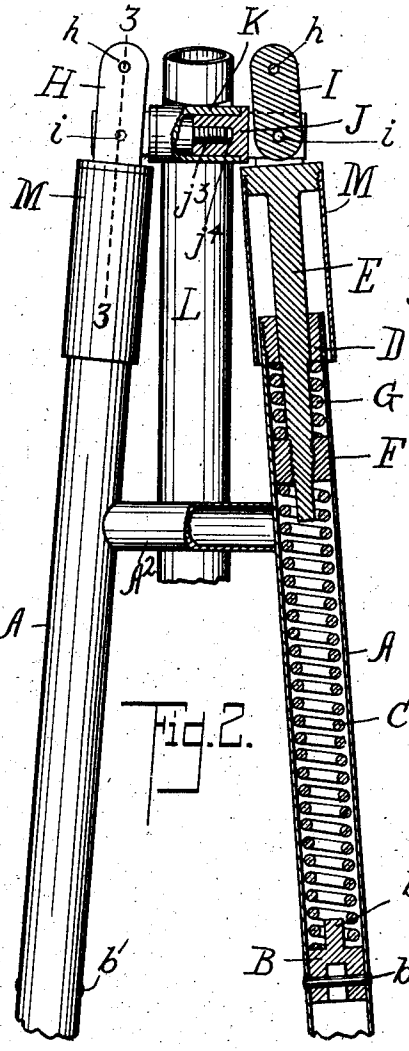

Fig. 2.

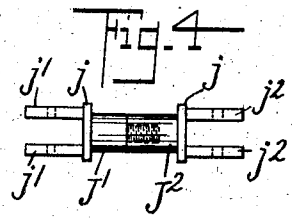

Fig. 4.

WITNESSES.

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No. 768,066. Patented August 23, 1904.

UNITED STATES PATENT OFFICE.

ALEXANDER P. MORROW, OF ELMIRA, NEW YORK.

CUSHION-FRAME.

SPECIFICATION forming part of Letters Patent No. 768,066, dated August 23, 1904.

Application filed December 3, 1903. Serial No. 183,588. (No model.)

To all whom it may concern:

Be it known that I, ALEXANDER P. MORROW, a citizen of the United States, and a resident of Elmira, in the county of Chemung and State of New York, have invented certain new and useful Improvements in Cushion-Frames, of which the following is a specification.

This invention relates to cushion-frames for bicycles and other like vehicles, and has for its object to produce a device that is both strong and neat in appearance.

In the accompanying drawings the device is shown as applied to the rear braces of a bicycle, and it will be noticed that it permits the use of straight rear tubular braces that are set an angle to each other, as is the case in the standard type of frames known as the "safety-frame."

In the drawings, Figure 1 represents part of a bicycle-frame that is equipped with this device. Fig. 2 is a rear view of the same, certain of its parts being broken away to show the construction, and one of the braces, its connection, and the parts within it being shown in vertical section. Fig. 3 shows a vertical section of the upper end of one of the braces and its connections on the line 3 3 of Fig. 2, and Fig. 4 shows one of the parts.

Referring to the drawings, A A represent the rear tubular braces of a bicycle-frame, which are attached, respectively, at their lower ends to the forks A′ A′ by suitable yielding joints A^3 A^3 and are fastened together by the tubular brace A^2. Spiral springs C C are contained within the tubes A A, respectively, and rest at their lower ends upon the seats B B, respectively, encircling a projection b' b' upon the seats B B, respectively, which are adapted to retain the springs in place. The seats B B are secured within the tubes A A, respectively, as by pins b b. A brass bushing D D is screwed within the upper end of each of the tubes A A, and a piston-rod E E is adapted to slide up and down through each of them. A plunger F F is screwed or otherwise secured upon the end of each of the piston-rods E E. The plungers bear upon the upper ends of the spiral springs C C, respectively. Other coiled springs G G are inserted within the tubes A A, respectively, and surround the piston-rods E E, respectively, lying between the bushings D D and the plungers F F, which bear upon their upper and lower ends, respectively. Similar parallel ears H H project upwardly from the upper ends of each of the piston-rods E E, and links I I are pivotally secured between each pair of ears, respectively, near their upper ends, as by pins h h. A yoke J, comprised of the stem J′, with its pair of ears j' j', and the stem J^2, with its pair of ears j^2 j^2, is pivotally connected to the lower end of the links I I, as by means of pins i i, which pass, respectively, at right angles to the axis of the yoke through both the ears j' j' and j^2 j^2 and the lower ends of the links I I, which latter lie, respectively, between the ears on said yoke. The parts J′ and J^2 of the yoke are secured together in any suitable manner, as by means of a threaded bolt j^3, which projects from the end of the stem J′ and enters an internally-threaded socket j^4 in the stem J^2.

The means just described for yieldingly connecting the piston-rods with the yoke are simple in construction, compact, and strong, and therefore desirable; but other means may be employed instead that will accomplish the same results in substantially the same way within the scope of this invention and which it is intended to claim.

The stems J′ J^2 of the yoke J lie within a bracket K upon the upper end of the tube L of the bicycle-frame, the shoulders j j on the yoke J engaging, respectively, the edges of the socket K to prevent it from sliding therein. The yoke is free to turn within its socket, and the screw connection between the stems J′ and J^2 render it adjustable with reference to the distance between the ends of the piston-rods E E when the latter are in place within their respective tubes A A.

Tubes M M may be attached to the bushings D D, respectively, to inclose the upper ends of the piston-rods E E and telescope the upper ends of the tubes A A, thereby protecting the parts from dust and giving the device an appearance much like that of the ordinary safety-bicycle frame.

The operation of the cushioning device is as follows: When an obstruction in the road is encountered by the bicycle, the rear tubular braces A A are forced upwardly upon the piston-rods E E, respectively, thereby com-

pressing the springs C C against the plungers F F upon the lower ends of said piston-rods, respectively, the piston-rods being held against longitudinal movement by their connection with the frame of the bicycle. At the same time the link connection between the pistons and the frame permits the pistons to move transversely away from the supporting-tube L and yet retain their alinement with the rear tubular braces A A. Thus the rear braces are made to slide freely and without binding both upon the pistons and within the outer tubes M M, that are attached to the pistons, respectively, while fitting closely one upon the other. The short springs G G receive the reaction from sudden or violent compression of the springs C C.

As in all cushion-frame bicycles, a yielding joint is necessary at A^4 between the crank-hanger and the front triangle of the frame, as well as at A^3 and between the yoke J and its support.

The plungers F F can be adjusted upon their respective pistons by screwing them up or down, so as to adapt them to springs C C of different length, and, furthermore, for the purpose of placing the springs C C under tension, if desired.

What I claim is—

1. A cushioning device comprising two angularly-disposed tubes; spiral springs within said tubes, respectively; a seat within each of said tubes for one end of said springs; piston-rods adapted to slide within said tubes, respectively; a plunger upon each of said piston-rods, adapted to compress the spring upon its said seat; a yoke for supporting said piston-rods; means for attaching said yoke to a support; and a transversely-adjustable connection between said yoke and each of said piston-rods whereby said piston-rods are, respectively, alined with reference to said tubes when said parts are moved longitudinally with reference to each other.

2. A cushioning device comprising two angularly-disposed tubes; spiral springs within said tubes, respectively; a seat within each of said tubes for one end of said springs; piston-rods adapted to slide within said tubes, respectively; a plunger upon each of said piston-rods, adapted to compress the spring upon its said seat; a yoke for supporting said piston-rods; means for attaching said yoke to a support; and links pivoted at their lower end to said yoke at right angle to its axis, and at their upper ends, respectively, to said piston-rods, substantially as shown and described.

3. A cushioning device comprising two angularly-disposed tubes; spiral springs within said tubes, respectively; a seat within each of said tubes for one end of said springs; piston-rods adapted to slide within said tubes, respectively; an adjustable plunger upon each of said piston-rods, adapted to compress the spring; and links pivoted at their lower end to said yoke at right angle to its axis, and at their upper ends, respectively, to said piston-rods, substantially as shown and described.

4. A cushioning device comprising two angularly-disposed tubes; spiral springs within said tubes, respectively; a seat within each of said tubes, for one end of said springs; piston-rods adapted to slide within said tubes, respectively; a plunger upon each of said piston-rods adapted to compress the spring upon its said seat; a tube carried by each of said pistons and adapted to telescope with said first-mentioned tubes, respectively; a yoke for supporting said piston-rods; means for attaching said yoke to a support; and links pivoted at their lower end to said yoke at right angle to its axis, and at their upper ends, respectively, to said piston-rods, substantially as shown and described.

5. A cushioning device comprising two angularly-disposed tubes; spiral springs within said tubes, respectively; a seat within each of said tubes for one end of said springs; piston-rods adapted to slide within said tubes, respectively; a plunger upon each of said piston-rods, adapted to compress one of said springs upon its said seat; a second spiral spring in each of said tubes between the other end of the piston and a seat upon the tube; a yoke for supporting said piston-rods; means for attaching said yoke to a support; and links pivoted at their lower end to said yoke at right angle to its axis, and at their upper ends, respectively, to said piston-rods, substantially as shown and described.

6. A cushioning device comprising two angularly-disposed tubes; spiral springs within said tubes, respectively; a seat within each of said tubes for one end of said springs; piston-rods adapted to slide within said tubes, respectively; a plunger upon each of said piston-rods, adapted to compress the spring upon its said seat; a yoke for supporting said piston-rods; means for attaching said yoke to a support; the links I I pivotally attached, respectively at their upper ends to said piston-rods and at their lower ends to said yoke; substantially as shown and described.

7. A cushioning device comprising two angularly-disposed tubes; spiral springs within said tubes, respectively; a seat within each of said tubes for one end of said springs; piston-rods adapted to slide within said tubes, respectively; a plunger upon each of said piston-rods, adapted to compress the spring upon its seat; the yoke J, having the adjustably-connected stems J′ and J² and the pairs of ears j' j' and j^2 j^2; the links I I pivotally attached, respectively at their upper ends to said piston-rods and at their lower ends to said yoke; substantially as shown and described.

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Witnesses:
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