

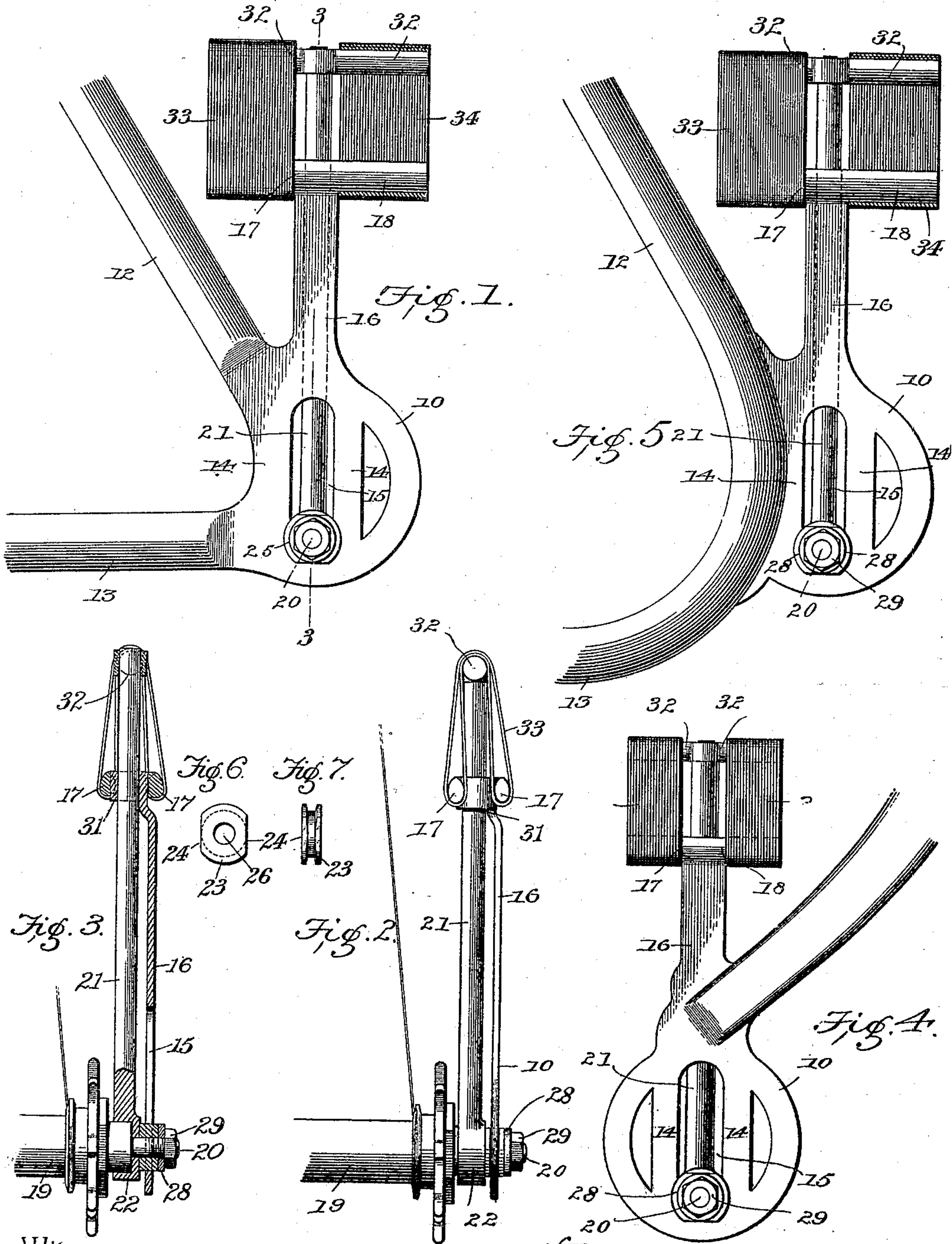
No. 635,028.

Patented Oct. 17, 1899.

W. B. SPENCER.
SPRING FRAME BICYCLE.

(Application filed Dec. 19, 1898.)

(No Model.)



Witnesses

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UNITED STATES PATENT OFFICE.

WILLIAM BARTON SPENCER, OF CHICAGO, ILLINOIS.

SPRING-FRAME BICYCLE.

SPECIFICATION forming part of Letters Patent No. 635,028, dated October 17, 1899.

Application filed December 19, 1898. Serial No. 699,724. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM BARTON SPENCER, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a new and useful Spring-Frame Bicycle, of which the following is a specification.

My invention relates to spring-frame bicycles of the class disclosed in United States Letters Patent No. 608,235, issued to me August 2, 1898; and the object in view is to reorganize and simplify the parts so as to bring the spring-cushion devices at points above the axle and locate them away from the wheel-hub in elevated positions where they are not disposed to become wet and muddy by the rotation of the wheel, and they are more convenient to the operator in adjusting and removing the spring loops or bands.

With these ends in view the invention consists in the novel construction and arrangement of parts, which will be hereinafter more fully described and claimed.

To enable others to understand the invention, I have illustrated the same in the accompanying drawings, forming a part of this specification, and in which—

Figure 1 is a side elevation of a portion of a bicycle-frame embodying my improvements. Fig. 2 is an elevation at right angles to Fig. 1. Fig. 3 is a vertical sectional view on the line 3 3 of Fig. 1. Fig. 4 is a side elevation showing the improvements applied to the steering-fork, and Fig. 5 is a side elevation of a modified form of the frame. Figs. 6 and 7 are detail views of the guide-block.

Like numerals of reference denote like and corresponding parts in each of the several figures of the drawings.

In carrying my invention into practice I employ a frame-plate 10, which may be connected either to the front or steering fork of a bicycle, as shown by Fig. 4, or to a portion of the frame adjacent to the rear-wheel hub, as in Figs. 1 and 5. In Fig. 1 the backstay 12 and the rear fork 13 of the frame are joined to the plate 10 in any substantial way; but this backstay and the rear fork may be made continuous one with the other, as represented by Fig.

5. I prefer to employ metallic tubing which is D-shaped in cross-section, so that the frame-plate may be united firmly to the flat sides of

the tubing; but it is obvious that tubing circular in cross-section may be employed.

As disclosed by my prior patent, the frame-plate is provided with vertical parallel bars 14 within the arched or circular outline of said plate 10, and these vertical bars form a guideway 15, adapted to slidably receive one end of the axle. The frame-plate in my present invention is made with a vertical arm or branch 16, which constitutes an integral part of said frame-plate and extends upwardly therefrom a suitable distance above the guideway 15. At its upper extremity the vertical arm or branch 16 is provided with two pairs of arms 17 18, which are rigid or fast with said branch 16. One pair of arms 17 extend from one side of the branch 16, while the other pair of arms 18 project from the opposite side of the branch 16, and each pair of arms has its members spaced a suitable distance from one another to lie on opposite sides of a vertical guide-stem, presently described.

The wheel-hub 19 is fitted in the usual way on the axle 20, the ends of which pass through and are fitted slidably in the vertical guideway of the frame-plate. The vertical guide-stem 21 is arranged between the frame-plate 10 and the wheel-hub, and at its lower end this guide-stem is enlarged to form the annular boss or collar 22. The boss or collar of the guide-stem is clamped firmly in place against the adjusting-cone of the wheel-hub by devices mounted on the axle and that serve to guide or direct the vertical play of the frame-plate in its movement with relation to the wheel-axle, and said guide device is constructed for ready application to or removal from the axle and the frame-plate. The guide is in the form of a block 23, nearly circular in form and with flattened faces 24 on opposite sides thereof, and this guide-block has an annular groove 25, the continuity of which is interrupted or broken by the flat faces 24. The guide-block between its flattened faces 24 is slightly less in diameter than the width of the guideway 15 in the frame-plate, but the diameter of the guide-block between its arc-shaped faces exceeds the width of the guideway 15. Said guide-block is also provided with a central opening 26, adapted to receive the axle, and one face of the block is adapted to bear against the eye-formed end 22 of the

guide-stem 21. A washer 28 is fitted on the axle to bear against the outside of the guide-block, and against said washer 28 is screwed the axle-nut 29, that is fastened to the axle.

5 The guide-block may be fitted to the axle and introduced into the slot of the frame-plate by turning the block to a position where the flattened edges thereof will slip into the slot of the frame-plate, and then the block is
10 partly turned on the axle to bring the grooved edges thereof into engagement with the edges of the slotted frame-plate. The washer 28 is now applied and the nut 29 screwed home to clamp the washer, the guide-block, and the
15 stem firmly in place against the cone of the wheel-hub; but as the frame-plate is confined within the grooved guide-block said frame-plate may move freely in a vertical direction.

The upper end of the vertical branch 16 of
20 the frame-plate is formed or provided between its pairs of arms with a clip or loop 31, which slidably embraces the vertical guide-stem 21, and this stem passes through the clip or eye 31, so that the cross-arms 32 on said stem lie
25 above the pairs of arms 17 18 on the branch 16 of the frame-plate. The cross-arm 32 is in a vertical plane between the pairs of arms 17 18 on opposite sides of the frame-plate branch, and a series of elastic bands 33 have
30 their looped ends fitted around one pair of arms 17 and rest upon one end of the cross-arm 32. Another series of elastic bands 34 rest upon the opposite end of the cross-arm 32, and the looped ends of these bands 34 are
35 fitted on the cross-arms 18 of the frame-plate. The elastic bands serve to yieldingly sustain the frame-plate in proper relation to the axle of the wheel-hub, but the frame-plate is free
40 to move vertically within certain limits and to distend the elastic bands so as to cushion the jar and vibration on the machine-frame.

It will be noted that the branch of the frame-plate and the vertical stem have the cross-arms disposed at a suitable elevation
45 above the horizontal plane of the wheel-axle, and the cushion-springs are thus raised above the ground to bring them to a position where they are not liable to receive accumulations of mud and dirt and also enable the operator

to gain access to the springs with greater convenience and facility in adjusting the springs
50 to vary the tension thereof or to replace the springs with new bands.

Changes may be made in the form and proportion of some of the parts, while their essential features are retained and the spirit
55 of the invention embodied. Hence I do not desire to be limited to the precise form of all the parts as shown, reserving the right to vary therefrom. 60

Having thus described the invention, what I claim is—

1. In a spring-frame bicycle, the combination with a frame-plate having a vertical guideway, of a bearing-block provided with
65 the arc-shaped grooved faces and the straight side faces which intersect with said arc-shaped faces and interrupt the continuity of the grooves therein, the width of the block between the straight faces being less than the
70 space in the guideway, and said block being adjustable in and removable from said guideway, a wheel-axle fitted to said bearing-block, means for clamping the axle and block together, and resilient suspending devices, substantially as described. 75

2. In a spring-frame bicycle, the combination of a frame-plate having a guideway and an upwardly-extending arm or branch, 16,
80 provided at its upper end with a guide or clip, a bearing-block fitted in said guideway of the frame-plate to slide freely therein, an axle clamped to said block, a wheel-hub, a vertical stem passing through the guide or clip and provided at its lower end with an
85 eye or boss which is fitted on the axle and is clamped between the bearing-block and the cone of said wheel-hub, arms on the upper ends of the frame-plate branch and the vertical stem, and resilient devices connecting
90 said arms, substantially as described.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

WILLIAM BARTON SPENCER.

Witnesses:

H. G. LLOYD,

J. T. RICHARDS.