No. 612,337. Patented Oct. 11, 1898.

M. L. HALL.

BICYCLE FRAME.

(Application filed Feb. 20, 1897.)

(No Model.)

Fig. 1.

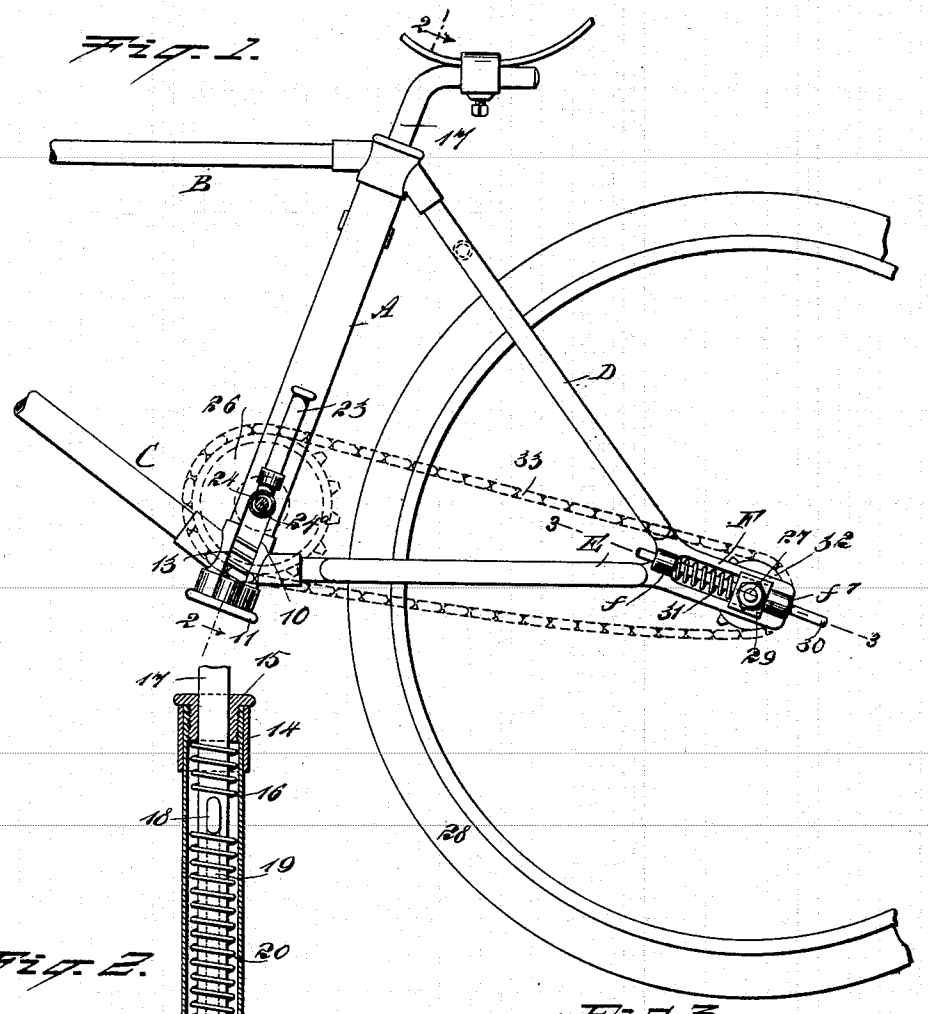


Fig. 2.

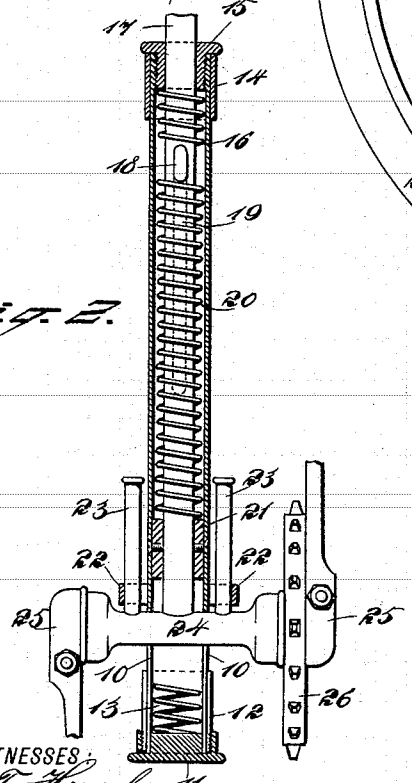
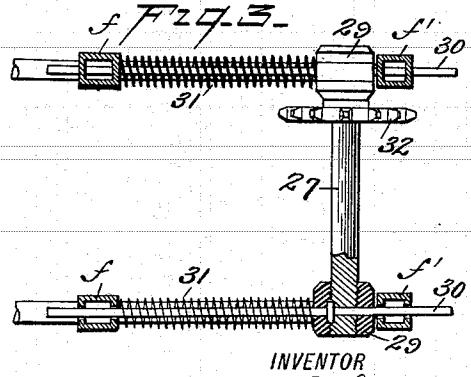


Fig. 3.



WITNESSES:

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MOSES L. HALL, OF KNOBEL, ARKANSAS, ASSIGNOR OF ONE-HALF TO FRED FERDIG, OF SAME PLACE.

BICYCLE-FRAME.

SPECIFICATION forming part of Letters Patent No. 612,337, dated October 11, 1898.

Application filed February 20, 1897. Serial No. 624,296. (No model.)

To all whom it may concern:

Be it known that I, MOSES L. HALL, of Knobel, in the county of Clay and State of Arkansas, have invented a new and useful Improvement in Bicycle-Frames, of which the following is a full, clear, and exact description.

The object of the invention is to so construct the center brace of a bicycle-frame receiving the seat-post that a perfect spring-seat will be obtained and at the same time the distance between the seat and the pedals will be equalized no matter what the weight of the person in the seat may be, the pedals under all conditions being the same distance from the seat.

Another object of the invention is to provide a hanger for the shaft of the rear wheel so constructed that the driving-chain will be kept tight under all conditions of riding and under all conditions of weight on the saddle.

A further object is to accomplish the foregoing results without departing materially from the ordinary construction of the bicycle-frame and without adding materially to the cost of construction or weakening the frame.

The invention consists in the novel construction and combination of the several parts, as will be hereinafter fully set forth, and pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures.

Figure 1 is a side elevation of the rear portion of a bicycle-frame having the improvements applied. Fig. 2 is a vertical section through the center brace of the frame, the section being taken practically on the line 2 2 of Fig. 1; and Fig. 3 is a sectional plan view of the bearings for the rear axle on the line 3 3 of Fig. 1.

A represents the center brace of a bicycle-frame; B, the upper brace; C, the lower main brace; D, the rear upper brace, and E the rear lower brace. Where the rear upper and the rear lower braces connect, a fork F is made at each side of the machine. The forward ends of the fork are closed by a bearing *f* and the rear ends by a similar bearing *f'*. The center brace A is provided at both sides of its lower portion with a longitudinal slot 10, the lower portion of the main brace being closed by a cap 11 and reinforced by a tube 12, and in the lower end of the center brace a cushion-spring 13 is placed. The upper end of the center brace is reinforced also by an exterior tube 14 and is closed by an apertured plug 15, while a spring 16 is secured to said apertured plug and extends a short distance downward therefrom within the aforesaid center brace.

The saddle-post 17 is passed through the aperture or opening in the plug 15 and is continued downward to the lower slots 10. Lugs 18 are projected from the front and rear of the saddle-post within the center brace, near the top of the latter, but below the upper cushion-spring 16. These lugs extend outward through longitudinal slots 19, produced in the front and rear portion of the center brace. A spring 20, preferably made of flat spring-wire, is coiled around the saddle-post within the center brace, having a bearing at its upper end against the lugs 18 and at its lower end upon a block 21, which is secured within the lower portion of the center brace, as shown in Fig. 1.

A guide-loop or a bearing 22 is formed upon each side of the center brace above the lower slots 10. Tubes 23 have sliding movement in these bearings, being attached at their lower ends to a crank-hanger 24, which extends through and has movement in the lower slots 10 of the center brace, as shown in Fig. 2. The pedal-shaft 24^a is held to turn in the crank-hanger 24, being provided at each end with any form of pedal 25. A sprocket-wheel 26 is secured on the pedal-shaft adjacent to one of the crank-arms to which the pedals are secured. The tubes 23 are closed at the top by suitable caps and may be employed as reservoirs for the lubricant to be supplied to the pedal-shaft. At the same time the tubes 23 act as guides for the seat-post.

The shaft 27 of the rear wheel 28 is held to turn in head blocks or boxes 29, having guided movement between the members of the forks F at the rear of the frame, as illustrated in Fig. 1. A shaft or a pin 30 is projected from the front and rear sides of each head block or box 29, said pins or shafts having sliding

movement in the bearings *f* and *f'*. A spring 31 is coiled around each pin or shaft between the head-block connected therewith and the forward bearing *f*. Any approved form of sprocket-wheel 32 is attached to one end of the shaft 27 of the rear wheel, being connected by a chain belt 33 with the forward sprocket 26. The spring which is coiled around the pin or shaft 30 at the side of the machine at which the sprocket 32 is placed is made stronger than the spring at the opposite side of the frame, as illustrated in Fig. 3, the increase in the strength of the spring being sufficient to prevent side draft.

It is evident that when a person is seated in the saddle connected with the saddle-post the crank-shaft will be carried downward proportionately to the distance that the weight of the rider forces the saddle-post downward or compresses the spring 20. Therefore the pedals will be the same distance from the saddle under all conditions of riding, thus obviating to a great extent the losing of the pedals by the jolting of the machine when passing over rough ground. The springs at the back, exerting tension on the shaft of the rear wheel, will yield proportionately to the spring 20, cushioning the saddle-post. Therefore the chain 33 will always be kept tight.

When a person jumps into the saddle, the shock consequent upon mounting forces the saddle-post downward, which, if forced sufficiently down, will be met by the lower cushion-spring 13, thereby preventing unpleasant jarring or shock to the rider. The upward movement of the saddle-post consequent upon dismounting will be checked to a certain extent by the projections 18 from the saddle-post striking the upper cushion-spring 16.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. In a bicycle-frame, a saddle-post, a tube carried by the frame in which the saddle-post has movement a crank-hanger attached to said saddle-post and having movement in the sides of said tube, the lower end of said tube extending below the crank-hanger, a spring located within said tube above the crank-hanger and serving as a cushion for the saddle-post, and an auxiliary spring located in said tube beneath the crank-hanger, as and for the purpose specified.

2. A bicycle-frame provided with a tube having longitudinal slots in its upper and its lower portions, a saddle-post having end movement in the said tube and provided with lugs projecting outward through the upper slots in the said tube, a crank-hanger connected with the lower end of the saddle-post to move therewith, the said crank-hanger extending through the longitudinal slots in the lower portion of the said tube, the lower end of the tube being closed and extending below the crank-hanger, a spring coiled around the saddle-post within the tube and having a bearing at its upper end against the said lugs on the saddle-post, and at its lower end upon a block secured within said tube, a spring surrounding the saddle-post at the upper end of said tube, and a spring located in the lower end of said tube beneath the crank-hanger and engaged thereby when the saddle-post is forced downward, as and for the purpose specified.

3. A bicycle-frame, a tube forming part of the frame, a saddle-post having end movement in the said tube, a crank-hanger attached to the saddle-post and moving therewith, the said crank-hanger having guided movement in the sides of the said tube, and a spring located in the tube beneath the crank-hanger and forming a cushion therefor when the saddle-post is forced downward, substantially as set forth.

4. The combination with the center brace of a bicycle-frame provided at opposite sides of its lower portion with longitudinal slots, of a saddle-post having guided end movement in the said center brace, a crank-hanger attached to the lower end of said saddle-post and extending through the said longitudinal slots and having movement therein, a guide-loop or bearing formed upon each side of the center brace above the said longitudinal slots, and tubes attached at their lower ends to the crank-hanger, extending upward at opposite sides of the said center brace and having sliding movement in the said guide-loops or bearings, the said tubes serving as reservoirs for the lubricant for the pedal-shaft and also acting as guides for the saddle-post, substantially as set forth.

5. A bicycle-frame provided with rear forks, said forks having bearings at their forward and rear portions, head-blocks having guided movement in the forks, a shaft for the rear wheel, journaled in the head-blocks, said shaft carrying a sprocket-wheel, pins projected from the head-blocks, having end movement in said bearings, and springs guided by said pins and normally exerting tension upon the head-blocks in a rearwardly direction, said springs being contained within the forks, and the spring in the fork adjacent to the sprocket-wheel being stronger than the spring in the opposing fork, as and for the purpose specified.

6. The combination with a bicycle-frame, a spring-controlled saddle-post having guided end movement in the frame, a crank-hanger attached to the saddle-post and movable therewith, and a pedal-shaft carried by the crank-hanger and provided with a sprocket-wheel, of a rear wheel having its shaft journaled in head-blocks having guided movement between the members of the rear forks of the frame, a sprocket-wheel on the said shaft connected by a driving-chain with the sprocket-wheel on the pedal-shaft, pins projected from the front and rear sides of each head-block, said pins having sliding movement in bear-

ings at the forward and rear portions of the rear forks, and a spring coiled around each pin between the head-block and the forward bearing and normally exerting tension upon the head-blocks in a rearwardly direction, the spring at the side of the machine at which the sprocket-wheel is placed being stronger than the spring at the opposite side of the frame for the purpose of preventing side draft, substantially as set forth.

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Witnesses:
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