No. 625,456. Patented May 23, 1899.

V. H. & J. H. T. MILLS.

BICYCLE FRAME.

(Application filed Mar. 12, 1897.)

(No Model.)

Fig. 1.

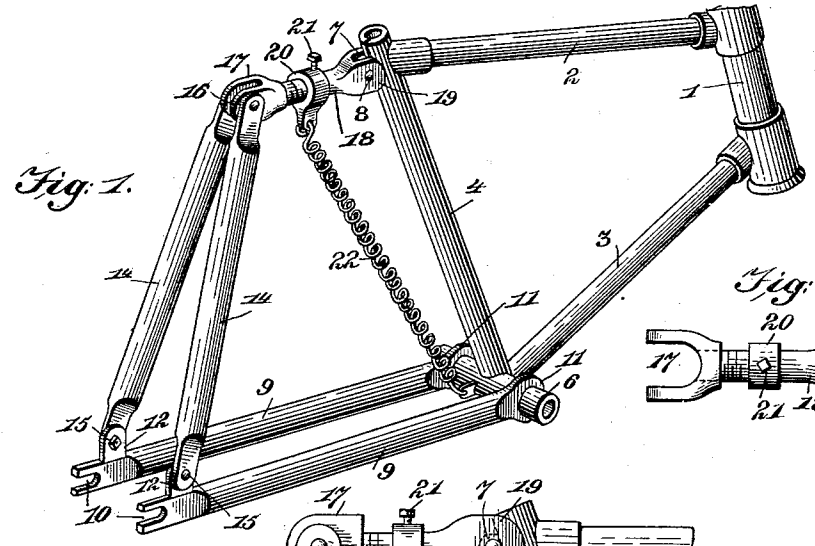


Fig. 3

Fig. 2

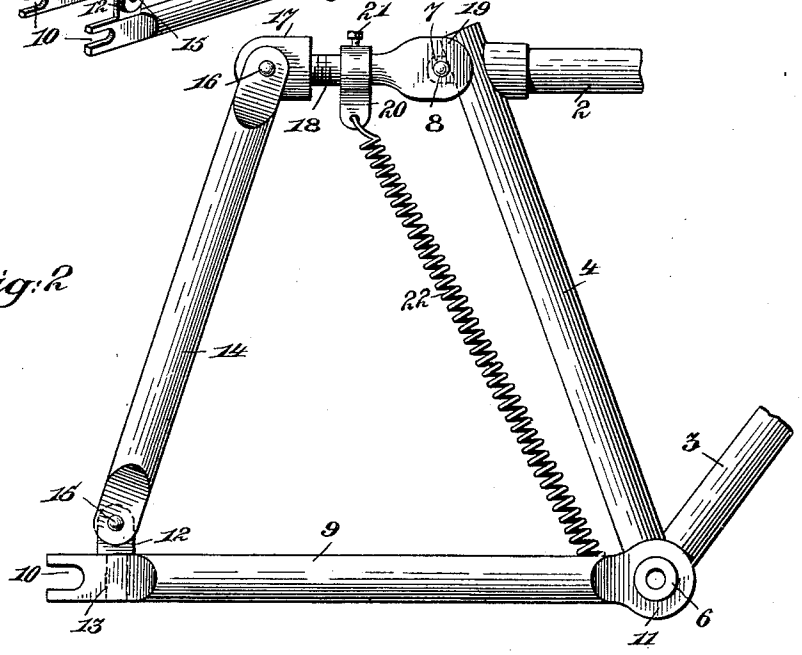
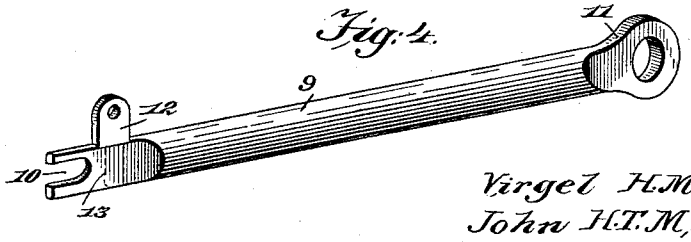


Fig. 4.



Witnesses

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UNITED STATES PATENT OFFICE.

VIRGEL H. MILLS AND JOHN H. T. MILLS, OF HUBBARD, TEXAS.

BICYCLE-FRAME.

SPECIFICATION forming part of Letters Patent No. 625,456, dated May 23, 1899.

Application filed March 12, 1897. Serial No. 627,173. (No model.)

To all whom it may concern:

Be it known that we, VIRGEL H. MILLS and JOHN H. T. MILLS, citizens of the United States, residing at Hubbard, in the county of Hill and State of Texas, have invented a new and useful Bicycle-Frame, of which the following is a specification.

This invention relates to bicycle-frames; and it has for its object to effect certain new and useful improvements in the construction of the "spring-frame" type of bicycles, wherein the rear drive-wheel of the machine is permitted to yield freely in a vertical direction, so as to absorb the shock or vibration incident to the passage of the machine over stones and rough roads.

With this object in view the invention consists in the novel construction, combination, and arrangement of parts hereinafter more fully described, illustrated, and claimed.

In the accompanying drawings, Figure 1 is a perspective view of a bicycle-frame embodying the improvements contemplated by the present invention. Fig. 2 is a side elevation of the rear portion of the frame, which is fitted with the improvements. Fig. 3 is an enlarged detail view of the coupling-link for connecting the seat-post tube of the frame to the upper ends of the rear braces. Fig. 4 is an enlarged detail in perspective of one of the rear forks of the frame.

The improvements contemplated by the present invention are specially adapted for use in connection with a bicycle-frame of the well-known diamond pattern, and in the drawings we have illustrated a frame of this type.

Referring particularly to the drawings, it will be observed that the frame is provided with the usual head tube or bearing 1, the upper horizontal frame bar or tube 2, the lower reach-bar 3, and the upright seat-post tube 4, the latter being connected at its upper end with the rear end of the frame bar or tube 2 and adapted to receive in its upper end in the usual way a seat-post. The said upright seat-post tube 4 is provided at its upper end with the usual slit, at opposite edges of which are arranged the lugs 7, receiving the usual bolt 8 for clamping the seat-post in place, and at the lower end of the seat-post tube 4 is arranged the crank-hanger 6, which in the present invention is somewhat elongated and provided with extended ends at opposite sides of the frame.

9 9 designate the horizontal rear forks, having at their rear ends the usual notches for the reception of the rear-axle bolt and provided at their forward ends with the loops 11, which pivotally receive therein the extended ends of the crank-hanger 6, thus pivotally attaching the rear forks 9 to the crank-hanger concentric, with the pedal-shaft as the center of vibration of said rear forks 9, whereby the rear forks and the wheel carried thereby may swing in a vertical plane, with the pedal-shaft as the center of oscillation, and thus obviate tightening or slackening of the sprocket-chain connecting the sprocket-wheel on the pedal-shaft and the rear wheel during such vertical vibrations of the rear forks and the wheel mounted therein.

At their rear ends the rear forks 9 carry upwardly-disposed perforated lugs 12, formed with reduced portions 13, engaging apertures formed in the forgings of the forks, although it will be understood that the said lugs 12 may be formed integrally with the fork-forgings. In connection with the perforated lugs 12 are employed the rear inclined upright braces 14, which are spaced apart in the usual way, so as to extend on opposite sides of the rear wheel of the machine, and the lower ends of these braces are pivotally connected, as indicated at 15, with the perforated lugs 12. The upper ends of the braces 14 are perforated, as shown at 16, to receive pivot pins or bolts projecting from opposite sides of a detachable and adjustable head 17 at the rear end of a coupling-link 18, the front end of which coupling-link is enlarged and bifurcated, as at 19, the arms formed by the bifurcation of said link being perforated to receive the projecting ends of the bolt 8 of the seat-post clamp, thus providing means for pivotally connecting the front end of the link 18 with the upper end portion of the seat-post tube 4.

By the construction above described it will be understood that the pivotally-connected parts 9, 14, and 18 provide a vertically-swinging frame portion for the rear wheel of the bicycle, so as to permit such wheel to freely move in a vertical direction to receive any shock and vibration caused by the passage of the machine over obstructions or rough roads.

The said vertically-movable frame portion is normally drawn in a downward direction by means of the strong coiled spring 22, and to provide for the attachment of this spring a collar 20 is slidably mounted on the link 18. This collar is provided with a set-screw fastening 21 and at its under side with a perforated lug, to which is attached the upper end of the spring, the lower end of which spring is preferably connected to the frame at the crank-hanger 6 thereof. The manner of mounting the collar 20 on the coupling-link 18 permits this collar to be adjusted longitudinally of the link, so as to regulate the tension of the spring 22 at will.

In our improved bicycle-frame we employ a strong spiral spring, which extends from the crank-hanger to the pivotal link, and said spring is attached to the link at a point between its pivotal connection to the rear braces 14 and the seat-post socket, whereby the spring pulls down on the link and upward on the crank-hanger to cushion the upward play of the rear wheel and the connected forks and braces 9 14, respectively. By attaching the spring as described the power of the spring is applied to the best advantage and the strain is distributed equally on the pivotal connections of said link to the seat-post socket and the rear braces, and at the same time the spring is readily attached and provision made for adjusting the tension of the spring. We make the forked end piece 17 separate from the link and adjustable to provide for setting the rear braces 14 at a proper angle and also to permit the collar being slipped in place on the latter, and said end of the link and the end piece are threaded, as shown, for the easy application and attachment of the end piece to the link.

We attach importance to the construction of the link with the threaded rear end, the coupling-head 17, secured on said threaded end of the link, and the collar 20, clamped adjustably to the link at a point between its pivotal attachment to the seat-post and the diverging rear braces. The attachment of the coupling-head 17 to the threaded extremity of the link enables the collar to be readily slipped in place and fitted to the link previous to the attachment of the head 17 to the link, and as the rear braces 14 are pivoted to the head 17 the latter is held from rotating or turning on the link to become detached accidentally therefrom. The use of the adjustable collar 20, which is movable on the link longitudinally, provides for straining the spring to vary its pull or tension. Thus the collar may be shifted along the link toward the seat-post socket to ease up on the spring, or said collar may be shifted on the link away from the attachment of the spring to the crank-hanger and toward the head 17, thereby straining the spring and increasing its tension. The adjustable collar is readily accessible for the described adjustment, and it is designed to be securely held in place by the set-screw 21, which is mounted in the collar and arranged to impinge on the link.

Having thus described the invention, what is claimed as new, and desired to be secured by Letters Patent, is—

In a bicycle-frame, the combination with the seat-post tube and the crank-hanger, of the rear forks pivoted at one end on the crank-hanger, rear braces pivoted at their lower ends to the rear ends of the forks, a vertically-swinging link pivoted at its front end to the upper end of the seat-post tube, a coupling-head 17 detachably and adjustably fitted on the rear end of the vertically-swinging link and pivotally connected to the upper ends of the rear braces, the adjustment of said coupling-head on the rear end of the link providing means for setting the rear braces at a proper inclination or angle, a collar slidably mounted on the link and having an adjustment corresponding to the adjustment of the coupling-head, and a spring attached at one end to said collar, and at its other end to the crank-hanger, substantially as set forth.

In testimony that we claim the foregoing as our own we have hereto affixed our signatures in the presence of two witnesses.

VIRGEL H. MILLS.
JOHN H. T. MILLS.

Witnesses:
WM. L. JONES,
JOHN C. GOULD.