

(No Model.)

F. SWEETLAND.
BICYCLE.

No. 491,200.

Patented Feb. 7, 1893.

Fig. 1.

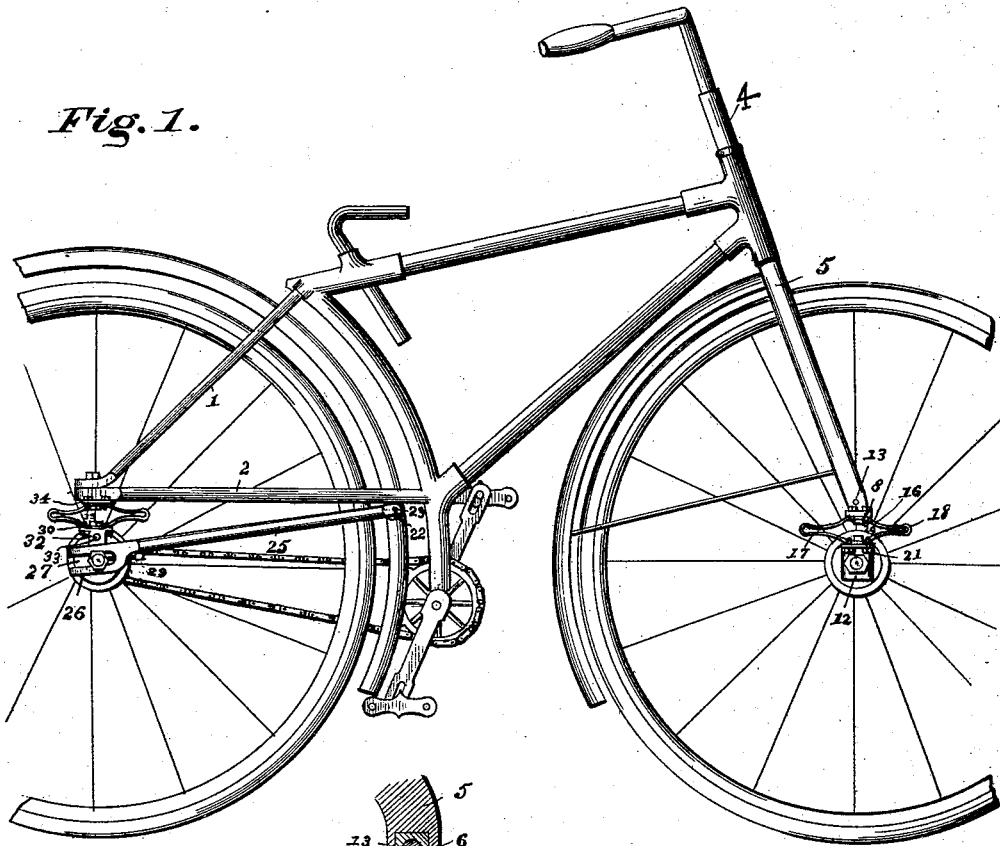


Fig. 3.

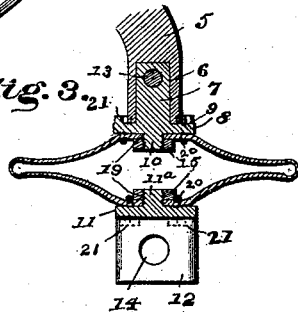


Fig. 5.

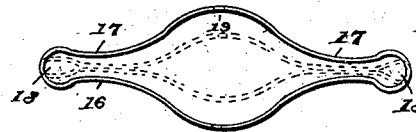


Fig. 2.

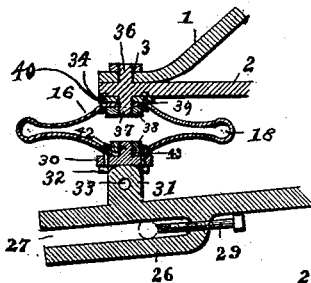
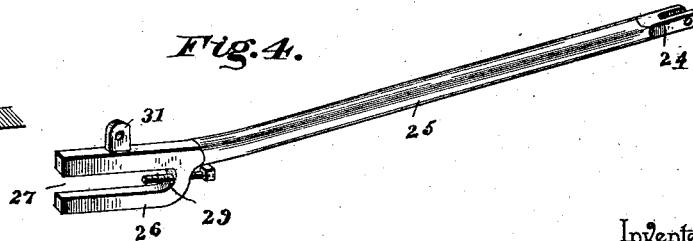


Fig. 4.



Witnesses

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UNITED STATES PATENT OFFICE.

FRANK SWEETLAND, OF ANGOLA, NEW YORK.

BICYCLE.

SPECIFICATION forming part of Letters Patent No. 491,200, dated February 7, 1893.

Application filed June 4, 1892. Serial No. 435,517. (No model.)

To all whom it may concern:

Be it known that I, FRANK SWEETLAND, a citizen of the United States, residing at Angola, in the county of Erie and State of New York, have invented a new and useful Bicycle, of which the following is a specification.

My invention relates to improvements in bicycles, and has especial reference to the improvement of the frame and spring.

10 The objects of my invention are:—first, to provide a spring so formed as to obviate or overcome sudden jars and jolts, to prevent front and back pitching of the machine when contacting with an object, and second, to provide a frame expressly designed for such form of spring and so constructed as to permit of adjustments on the rear wheel.

With these and other minor objects in view, my invention consists in certain features of construction hereinafter specified and particularly pointed out in the claim.

Referring to the drawings: Figure 1 is a side elevation of the bicycle embodying my invention. Fig. 2 is a section through the rear fork. Fig. 3 is a section through the front fork. Fig. 4 a detail in perspective of the vibrating-bar for forming the bearing for the rear wheel. Fig. 5 is a detail in elevation of the spring, the same being shown closed by dotted lines.

Like numerals of reference indicate like parts in all the figures of the drawings.

The frame is preferably of the "diamond" pattern, it comprising in its make-up the rear forks 1 and 2, the former being above the latter and the two converging and meeting at opposite sides of the rear wheel and terminating in aligning eyes 3. The front of the frame is connected to the usual steering-bar 4, which latter, after the ordinary fashion, is bifurcated at its lower end to form the front forks 5. The forks 5 have sockets 6 in their lower extremities, and in the same fit tenons 7, formed on the upper sides of a pair of plates 8. The plates are rectangular in shape and are provided at their four corners with bolt-holes 9, and upon their under sides, at their centers, with threaded studs 10. 11 designates a pair of companion plates, which are similar to the plates 8, though reversed in that their upper surfaces have the threaded studs 11^a, similar to the studs 10 of the plates

8, and their under surfaces have the bearing plates 12, which correspond to the tenons 7 of said companion plates 8. The tenons 7 are provided with transverse perforations 13, through which bolts may be passed, said bolts also extending through the forks 5. The bearing plates 12 have bearing openings 14, to receive the front axle. Upon the threaded studs 10 and 11^a binding nuts 15 are placed.

The springs employed are interposed between the pairs of plates 8 and 11. These springs may be formed of round steel or steel that is flat or elliptical in cross-section, but I prefer the flat or ribbon steel, as the same more readily resists lateral movement or torsional strain. Each spring consists of opposite members 16, which are slightly bowed near their centers, and at each side of the same are curved so that when brought together, or the spring compressed, said members will lie flat upon each other for a considerable portion of their lengths at each side of their centers. Such curved extremities I have indicated as 17. Beyond these extremities or curved portions 17 small end loops or eyes 18 are formed. It will be understood that the springs are preferably formed integral, and by the provision of the eyes or loops 18, early fracture of the springs at such points is avoided. These springs are provided at the centers of their opposite members with circular openings 19, and through them take the threaded studs 10 and 11^a of the plates 8 and 11, respectively, the nuts 15 being applied to said extremities and serving to clamp the members in position. As an additional connection, pairs of U-shaped clips 20 are provided, a pair for each plate, and the extremities of these clips embrace the opposite members of the springs and are passed through pairs of perforations 9, before mentioned as being formed in each of the plates 8 and 11, and beyond the plates nuts 21 serve to bind the clips in position.

By the employment of the spring described, it will be seen that I avoid early fracture at the angles or ends of the springs, which is likely to occur in all elliptical springs, and furthermore, when the springs are compressed by reason of the wheels meeting with and passing over obstacles in the road, the convexed faces 17 first contact at their juncture

with the eyes 18, or in other words at their outer extremities, and as they are still further compressed and diverge from their extremities inward, more or less of these faces meet and have contact, so that the spring is gradually made smaller and offers greater resistance to compression, whereby, as will be obvious, the jolt caused by the obstruction is consumed in the resiliency of the springs.

A lug 22 is formed on the under side and near the center of the lower forks 2, or at the point where they meet, and to the same is pivoted, at 23, the forked ends 24 of a bar 25. This bar is provided upon its under side and at its rear extremity with an L-shaped bracket 26, whose shape creates, between itself and the bar 25, a slot 27, designed to receive the journals of the rear wheel. The journals I have shown by dotted lines as located in the slot, and the same may be moved within the slot by a set-bolt 29, passed through the end of the bracket 26. In this manner the chain may be loosened or tightened.

30 designates a pair of blocks, one for each of the bars 25, which latter, it will be understood, is forked to agree with the rear forks 1 and 2 and to embrace at opposite sides the rear or drive-wheel. A perforated tenon 31 is formed upon each of the bars 25, and the same pass between pairs of bifurcations or bearing-lugs 32, formed on the under sides of the blocks 30, and through the lugs and tenon 31 pivoting-bolts 33 are passed, whereby the blocks and bars become pivoted together.

34 designates a pair of plates, provided upon their upper sides with threaded studs 36 and upon their lower sides with similar studs 37. The studs 36 pass through the eyes 3, of the rear forks 1 and 2, while the studs 37 pass through the perforations in the members of the rear springs, which springs, it will be observed, are similar to those employed at the front fork of the machine, and consequently require no special description. The studs 37 are aided by means of nuts 38 and U-shaped clips 39, which latter have their extremities, after embracing the spring-members, passed upwardly through the perforations 40, with which the plates 34 are provided, and subsequently said clips are nuted. Stud 42 are formed on the block 30, pass through perforations in the

lowerspring-members, and provided with nuts. These studs are also aided by pairs of U-shaped clips 43, which embrace the lower members of the springs, pass through perforations in the blocks, and are nuted at their extremities.

This completes the construction of the machine, and it will be seen that between each end of the machine and the axles of the wheels my improved springs are interposed and act to absorb in an efficient manner the jars caused by the wheel passing over rough roads and meeting with obstructions.

If desired, other means may be provided for securing the springs in position, but I have found the blocks and plates described as possessing many advantages and hence prefer but do not limit my invention to their use.

Having described the invention, what I claim is:

In a bicycle, the combination with the upper and lower forks 1 and 2, terminating at their lower ends in eyes, said lower forks being provided with depending perforated lugs, of the bars 25 bifurcated at their front ends to receive and pivoted to the lugs and provided upon their upper sides near their rear ends with perforated lugs and upon their under sides with L-shaped brackets with which they combine to form slots, bearing-boxes mounted in the slots, set-screws passed through the front ends of the brackets and into the boxes, the blocks 30 having the perforated bearing-ears 32 embracing the lugs or tenons on the bars 25, said blocks being provided with perforations and with upwardly-disposed studs, the plates 34 having the upper and lower studs 36 and 37 and the perforations, said upper studs passing through the eyes in the frame, the springs perforated to receive the adjacent studs, the nuts on the studs, and the pairs of U-shaped clips passing through the plates and blocks and embracing springs, substantially as specified.

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

FRANK SWEETLAND.

Witnesses:

JAS. TAYLOR,
N. B. WOOD.