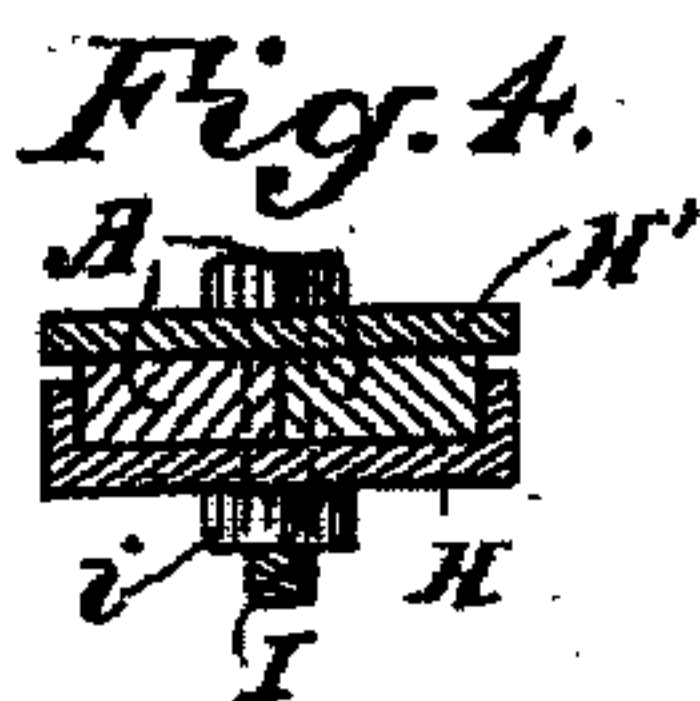
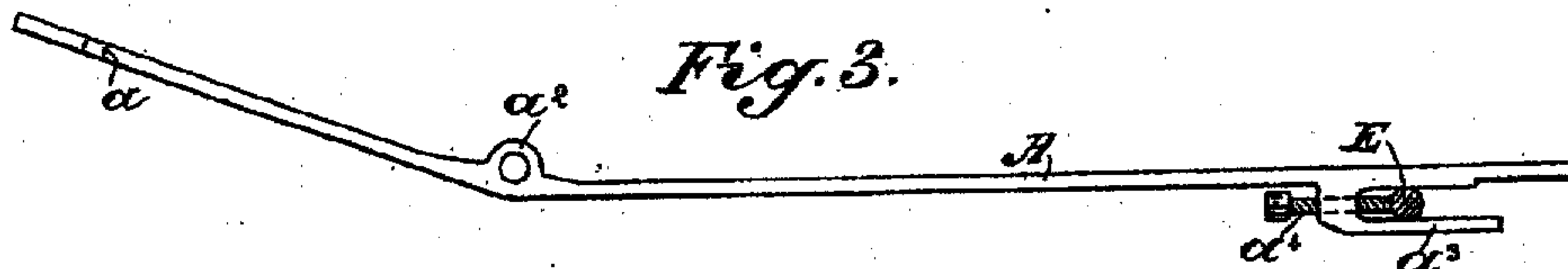
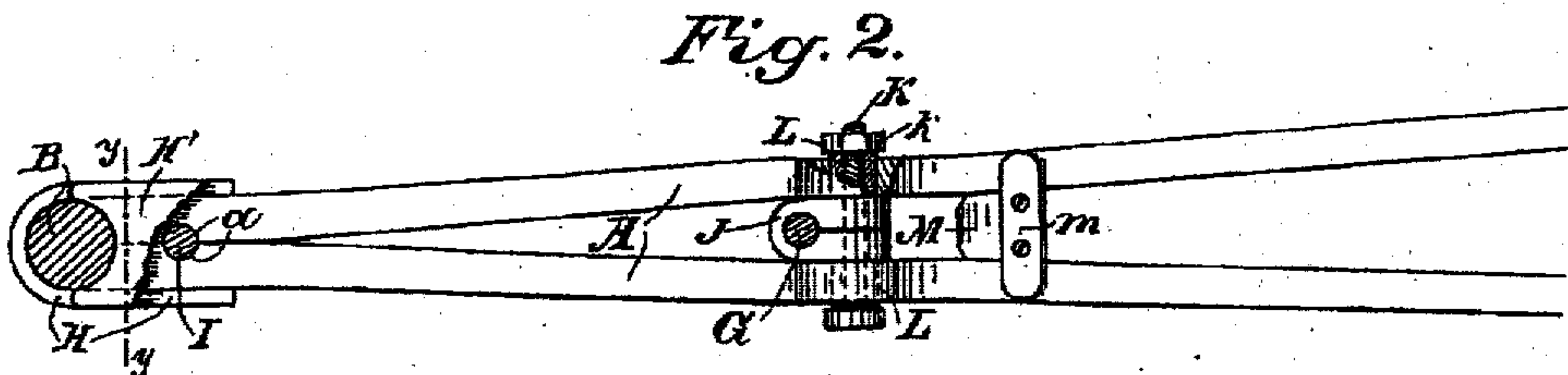
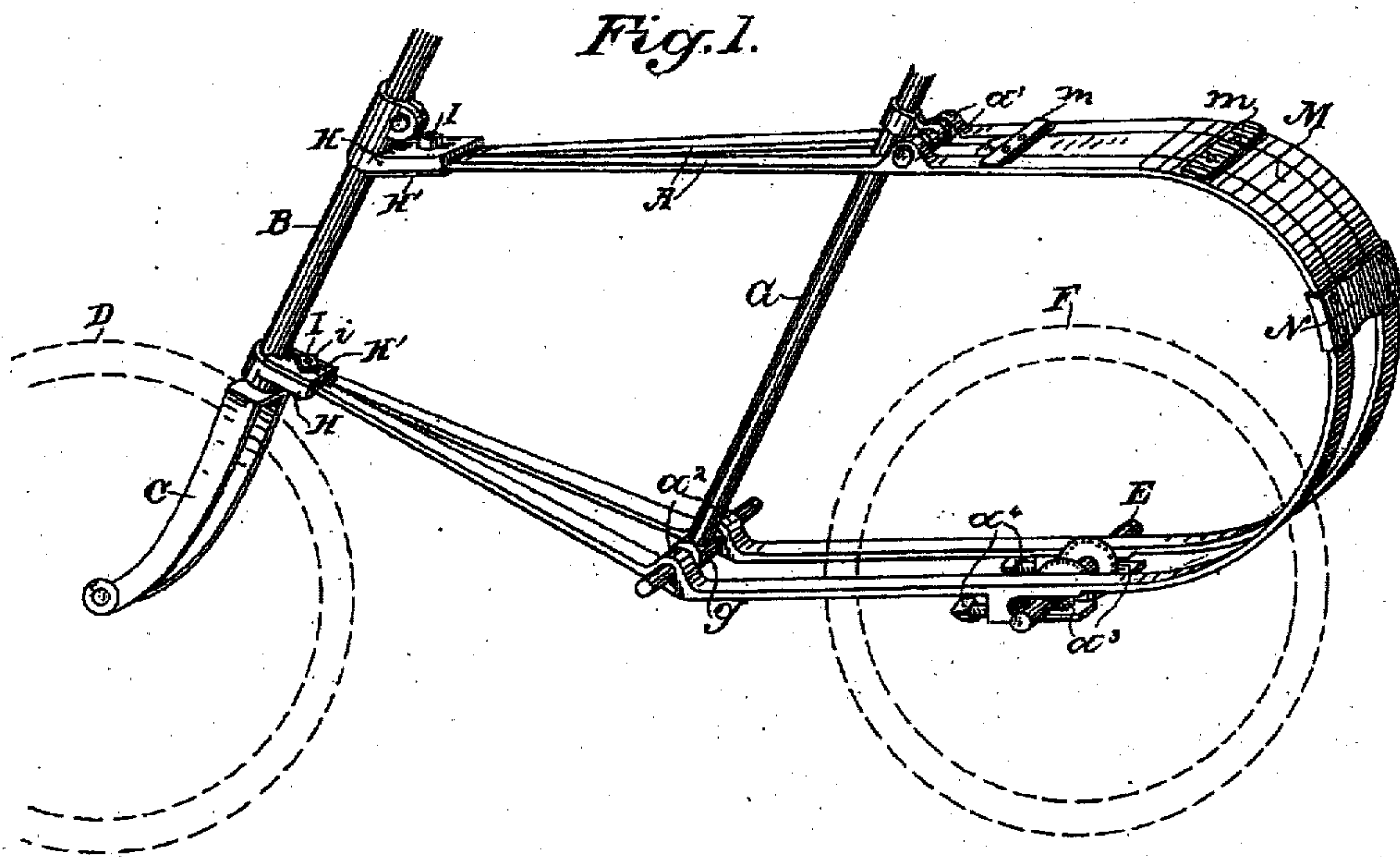


(No Model.)

S. M. WILLIAMS.  
BICYCLE FRAME.

No. 567,430.

Patented Sept. 8, 1896.



Witnesses,  
*J. H. Morse*  
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# UNITED STATES PATENT OFFICE.

SYLVESTER M. WILLIAMS, OF SAN FRANCISCO, CALIFORNIA.

## BICYCLE-FRAME.

SPECIFICATION forming part of Letters Patent No. 587,430, dated September 8, 1896.

Application filed November 8, 1895. Serial No. 568,267. (No model.)

*To all whom it may concern:*

Be it known that I, SYLVESTER M. WILLIAMS, a citizen of the United States, residing in the city and county of San Francisco, State of California, have invented an Improvement in Bicycle-Frames; and I hereby declare the following to be a full, clear, and exact description of the same.

My invention relates to the general class of bicycles, and more particularly to the frames thereof.

It consists in the novel construction of the frame, which I shall hereinafter fully describe, and the object of which is to avoid, by providing a spring or elastic frame, the jars and shocks attendant upon the use of a rigid frame.

Referring to the accompanying drawings, Figure 1 is a perspective view of my bicycle-frame. Fig. 2 is a top view showing parts broken away to reveal the construction. Fig. 3 is a side view of the lower portion of one of the spring-bars. Fig. 4 is a cross-section on line *y y* of Fig. 2.

The frame is composed of two bars A. These are springy or elastic and may be made of any suitable material, wood or metal or other material. They may have any desirable shape in cross-section and may be tubular or solid. I have here shown them as flat metallic bars. They are bent or returned upon themselves in the shape, approximately, of an elongated letter C, their extremities being secured to the stem B of the fork C of the front wheel D. Their rear lower portion has a bearing on the axle E of the rear wheel F, and they have, both above and below, a connection with the saddle-post bar G. These connections with bar G are such as to permit free play to the bars A in exercising their springy or elastic functions, so that the rider is relieved of all the shocks and jars which he experiences with the use of a rigid frame, with or without a saddle spring.

The several connections may be of any suitable character adapted for the main purpose of the invention, but the best forms of these are as follows: The two head connections are similar, but reversed with respect to each other. Each consists of a main plate H, secured to the fork-stem B, and a clamp-plate H'. Between these the bars A fit and

are secured by a bolt I, passing through the plates and through a socket formed by semicircular notches *a* in the meeting edges of the bars. The bolt takes a nut *i*, by which it is tightened. These plates H and H' conform properly to the cross-sections of the bars, whatever these may be. When the bars are round, the plates will have semicircular sockets to receive and clamp them. When flat, as here shown, the main plate is channelled out and the clamp-plate is flat. In any case the bars are firmly bound between the plates. The upper saddle-post-bar connection consists of a split clamp J, fitted to the bar G. Upon the frame-bars A are lugs *a'*, through which and through the intervening tailpiece of the split clamp J passes a bolt K, receiving a nut *k*. The holes in the lugs *a'* are larger than the bolt, and in them are seated sleeves L, which are longer than the bars A are wide, so that the bolt-head and nut bear on these sleeves and force them against the split clamp J, thereby causing the latter to bind securely on the bar G while permitting the bars A to have the necessary pivotal action to carry out their spring or elastic function. The lower end of the bar G is provided or formed with a cross-journal *g*, upon which the bars A are pivoted, as shown at *a''*. The customary ball-bearing connection for the crank-shaft is made with the cross-journal *g*, which thus becomes the crank-hanger. The lower rear portion of the frame-bars A have slotted lugs *a'''*, in which the axle of the rear wheel fits and is adjusted by the screws *a''''* in much the same manner as the usual connection is made with the rear forks.

M is a mud-guard secured between the bars A over the rear wheel, and *m* are the cleats by which it is held in place.

N is a brace to hold together and stiffen the rear portions of the frame-bars A.

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

1. A bicycle-frame composed of spring or elastic bars bent or returned upon themselves, having connections at their extremities with the stem of the front-wheel fork, connections at their rear lower portions with the axle of the rear wheel, a saddle-post bar extending from the upper member of the bent frame to



the lower member thereof, and transverse journals on the upper and lower members of the frame to which said bar is connected whereby the frame is permitted to freely yield.

2. A bicycle-frame composed of spring or elastic bars bent or returned upon themselves, having connections at their extremities with the stem or the front-wheel fork, connections at their rear lower portions, a saddle-post extending from one member of the frame to the other, a split clamp on the saddle-post bar pivotally connected with the upper member of the frame and a cross-journal at the lower end of said post pivotally connecting it with the lower member of the frame.

3. A bicycle-frame composed of spring or elastic bars, bent or returned upon themselves, having connections at their extremities with the stem of the front-wheel fork, connections at their rear lower portion with the axle of the rear wheel, a pivotal connection with the upper portion of the saddle-post bar consisting of the split clamp, the binding-sleeves and the bolt, and a pivotal connection with the foot of the saddle-post bar.

4. A bicycle-frame composed of two parallel springs or elastic bars, bent or returned upon themselves, having their front ends brought together and provided with sockets in their adjoining faces, a front-wheel fork with its stem, main plates secured to the stem and receiving said ends, clamp-plates above said ends, bolts passing through the clamp-plates and main plates, and through the sockets in said ends, for securing the ends, a connection for the rear of said bars with the rear-

wheel axle, a saddle-post bar having a clamp, pivotal connections between the clamp and the upper member of said frame and a pivotal connection between the lower portion of said saddle-post bar and the lower member of the frame.

5. A bicycle-frame composed of two parallel, flat spring or elastic bars, bent or returned upon themselves and brought together at their forward ends, a front-wheel fork with its stem, main plates secured to said stem, and clamp-plates secured to the main plates, said plates receiving the extremities of the spring or elastic bars between them, a connection for the rear of said bars with the rear-wheel axle, a saddle-post bar and pivotal connections above and below between said spring or elastic bars and the saddle-post bar, the upper connection consisting of the split clamp, the binding-sleeves projecting beyond the plane of the sides of the frame and the bolt.

6. A bicycle-frame composed of spring or elastic bars, bent or returned upon themselves, suitable connections for their extremities with the stem of the front-wheel fork, a suitable connection for their rear lower portions with the rear-wheel axle, pivotal connections above and below with the saddle-post bar, a mud-guard between said spring or elastic bars over the rear wheel and cleats on said bars for holding the guard in place.

In witness whereof I have hereunto set my hand.

SYLVESTER M. WILLIAMS.

Witnesses:

S. H. NOURSE,  
WM. F. BOOTH.