(No Model.)

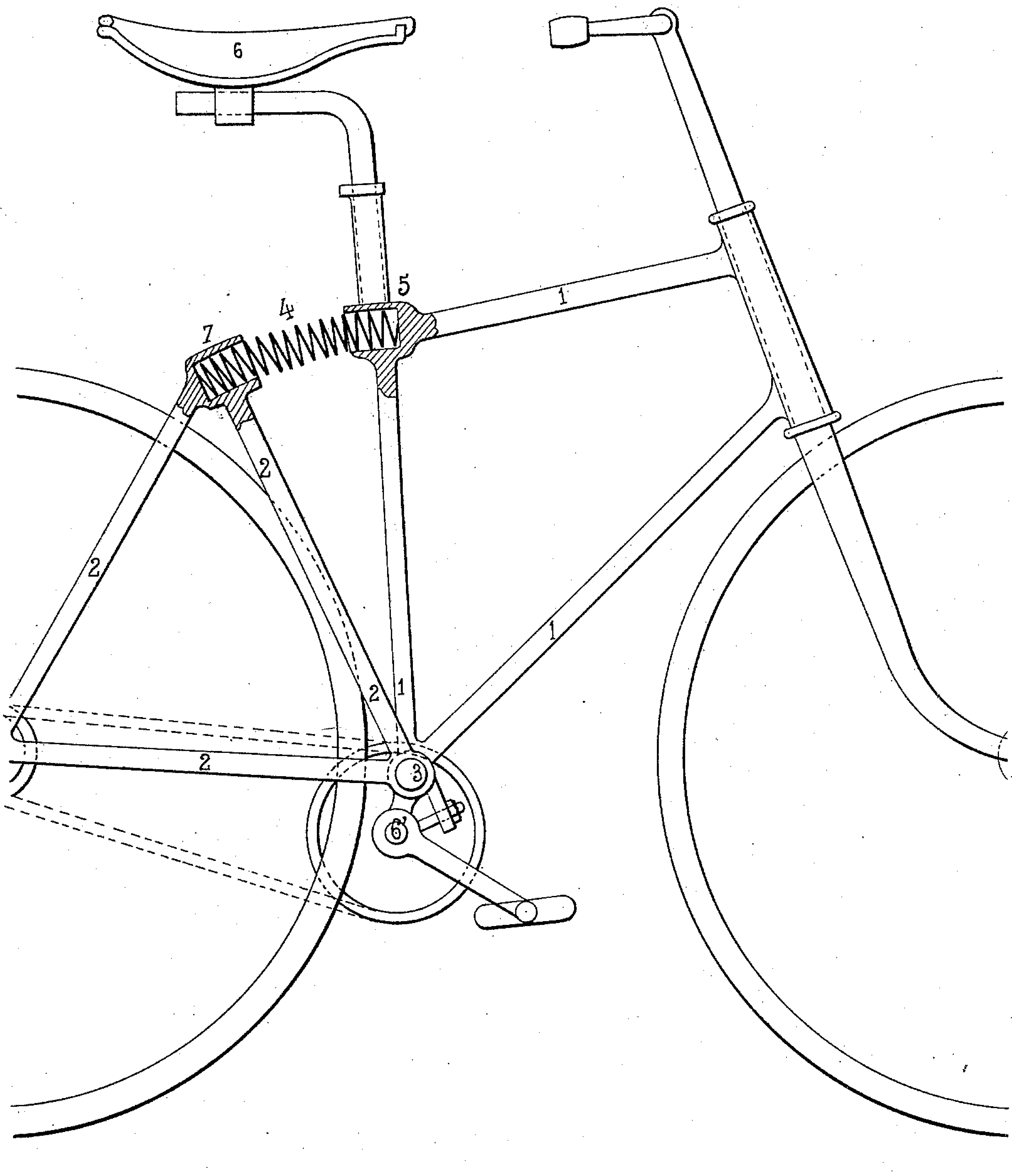
2 Sheets—Sheet 1.

F. CLÉMENT.

BICYCLE.

No. 468,643. Patented Feb. 9, 1892.

fig. 1.



Witnesses

Robt. M. Harper

J. Jones

Inventor.

Felix Clément

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

(No Model.) 2 Sheets—Sheet 2.

F. CLÉMENT.

BICYCLE.

No. 468,643. Patented Feb. 9, 1892.

fig. 2.

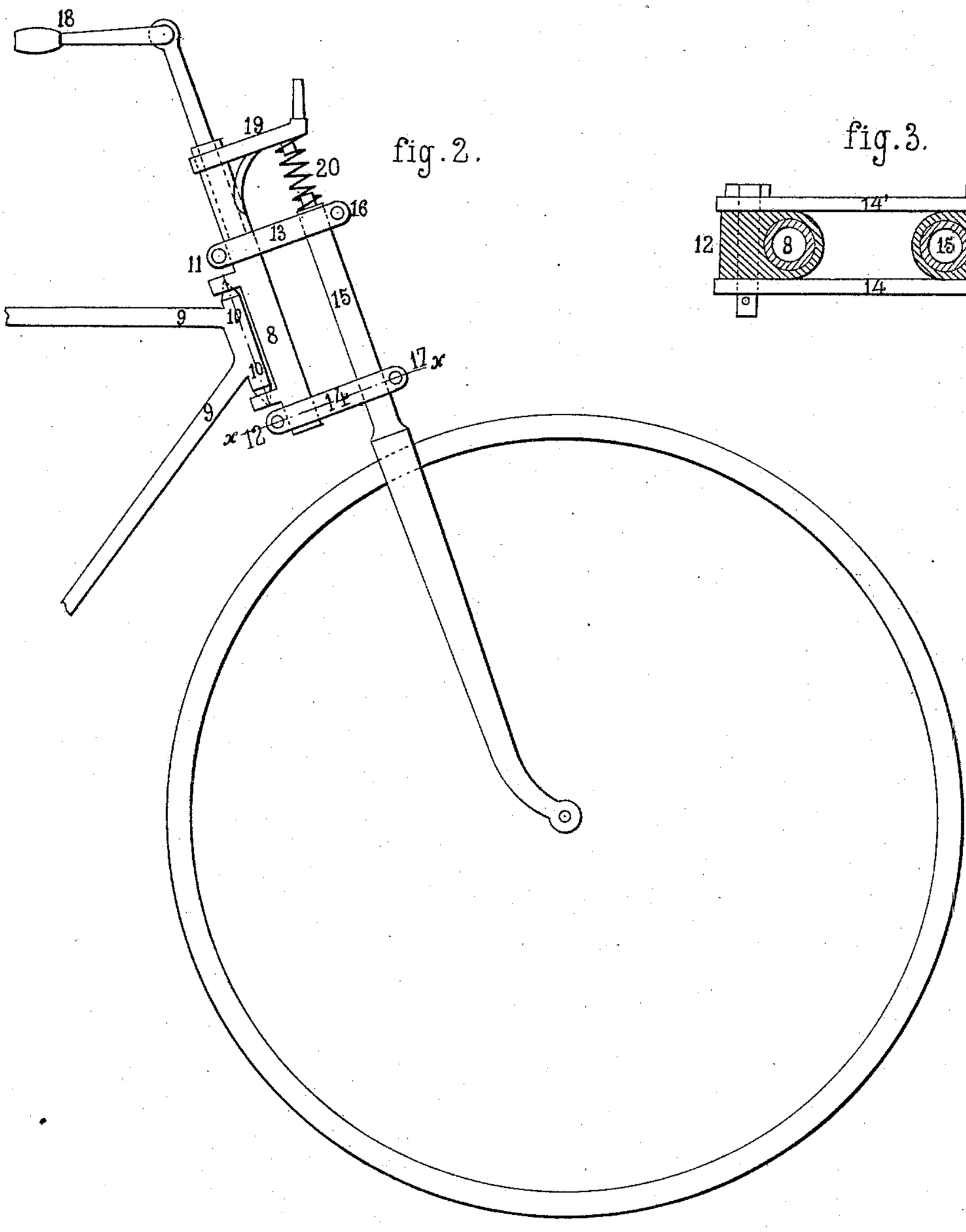


fig. 3.

Witnesses

Inventor

Félix Clément

UNITED STATES PATENT OFFICE.

FELIX CLÉMENT, OF SALINS, FRANCE.

BICYCLE.

SPECIFICATION forming part of Letters Patent No. 468,643, dated February 9, 1892.

Application filed April 17, 1891. Serial No. 389,331. (No model.) Patented in France September 17, 1890, No. 208,302.

To all whom it may concern:

Be it known that I, FELIX CLÉMENT, a citizen of France, residing at Salins, in the Department of Jura, in the Republic of France, have invented a new and useful Improvement in the Construction of Bicycles and other Walking Cycles, (for which I have obtained French Patent No. 208,302, dated September 17, 1890,) of which the following is a specification.

My invention relates to improvements in the construction of the frames of velocipedes and other forms of machines which are adapted to be ridden. When machines of this character are constructed with rigid frames, as they usually are, they are very fatiguing to the rider, owing to the inequalities of the road. The jolting of the rider is somewhat modified by the springs of the saddle, but the rigid construction of the frame causes it to soon rattle itself to pieces.

The object of my invention is to obviate these difficulties by constructing a yielding or flexible frame that will be durable, and will also be easy to the rider, so that, if desired, the saddle-springs may be dispensed with.

To this end my invention consists in certain features of construction and combinations of parts, which will be hereinafter described and claimed.

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

Figure 1 is a broken side elevation of a Safety bicycle provided with a frame embodying my invention. Fig. 2 shows the invention as applied to a bicyclette or small tricycle, and Fig. 3 is a sectional plan on the line x x in Fig. 2.

As shown in Fig. 1, the main frame is composed of two parts 1 1 and 2 2, which are pivoted together at their lower portions on a shaft 3, and the frames are thus capable of an oscillating movement in relation to one another on said shaft. The part 1 1 of the frame carries the saddle 6, which may or may not be supported by springs and rests on the front wheel by means of the usual fork, which serves to guide the machine. The rear part 2 2 has the form of a triangle resting at one of its angles on the rear wheel and joined at another angle by the shaft 3 with the front frame 1 1, as above described. This part 2 2 also carries the pedal-shaft 6′, which is suspended at the lower end of the frame. The upper angles of the two parts or frames 1 1 and 2 2 have the form of sockets 5 and 7, which sockets serve as bearings for the two extremities of a spiral spring 4. This spring can be replaced by any other elastic device fitted to answer the same purpose and constitutes the essential feature of my invention. Its rigidity is calculated according to the weight to be supported, and it always tends to separate the two parts of the frame. Any weight placed on the saddle of the bicycle forces the two parts of the frame together and compresses the spring, but not sufficiently to bring the sockets 5 and 7 into contact. It will be seen, then, that the points of support being the axes of the two wheels, all jar will tend to cause the frame to yield at 3—that is, to cause the sockets 5 and 7 to approach one another. The spring 4 in opposing this approaching of the sockets by its own elasticity will absorb the force produced by the shock, completely exhausting the latter, and will then return to its position of equilibrium.

As shown in Figs. 2 and 3, the device is more particularly applicable to small bicycles and tricycles, and in this form not only the guiding-fork, but all the front part, is movable around a substantially vertical axis to allow of steering the apparatus. In this form of vehicle I arrange the anti-vibrating spring in the front part. For this purpose the socket 8 of the steering device is joined by a hinge to the rear part 9 of the vehicle in such a manner as to be able to turn on the axis 10 10. On this socket 8 are secured two rings provided with two projections 11 and 12, serving as joints for bars 14 14′ and 13 13′, which connect it with a socket 15 of the fork, on which are secured rings with projections 16 and 17, similar to the projections 11 and 12. The bars 13 and 13′ are thus arranged above the bars 14 14′, and the ends of the bars fit upon the projections aforesaid. This system of articulation is shown clearly in the sectional plan in Fig. 3. The part formed by the bars 13 13′ and 14 14′ and the sockets 8 and 15 constitutes an articulated parallelogram, which permits the socket 15 to move rela-

tively to the socket 8, running always parallel to the latter and turning with it around the axis 10 10 when the handle-bar 18 is acted upon. The lantern-carrier 19 is fixed on the upper part of the socket 8, and between this and the upper end of the socket 15 is placed, compressed, the anti-vibrating spring 20 or other equivalent device of the class mentioned above. Any shock received by the front wheel is prevented by the compression of the spring from being transmitted to the frame, and is much decreased if the force of the spring has been properly calculated. It will thus be seen that by the use of one or the other of the arrangements of anti-vibrating springs all vibration, and consequently all fatigue and all deterioration produced by shock, is prevented, and this is accomplished by a simple device, which does not sensibly increase the weight of the machine or render its construction more difficult. It will be noticed that the location of the spring is such that it will receive directly the shock transmitted by either of the wheels, and that the great elasticity of the frame makes it possible to do away with the saddle-spring, thus avoiding the incessant approach of the saddle and the pedals, which is a great cause of fatigue on uneven or paved roads.

I am aware that it is not new to use spring bicycle-frames to reduce vibration, and I do not claim a spring-frame, broadly, as my invention, but only the peculiar and novel construction described and shown, which construction enables the frame to be cheaply made and to efficiently perform its work.

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

In a bicycle, the combination, with the wheels and the steering-fork, of a two-part frame having members of essentially triangular shape, said members being hinged together near the bottom, one member being mounted on the rear wheel and the other on the steering-fork, sockets formed in the upper adjacent portions of the members, and a spring extending from socket to socket, substantially as described.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

FELIX CLÉMENT.

Witnesses:
ROBT. M. HOOPER,
H. LONG.