

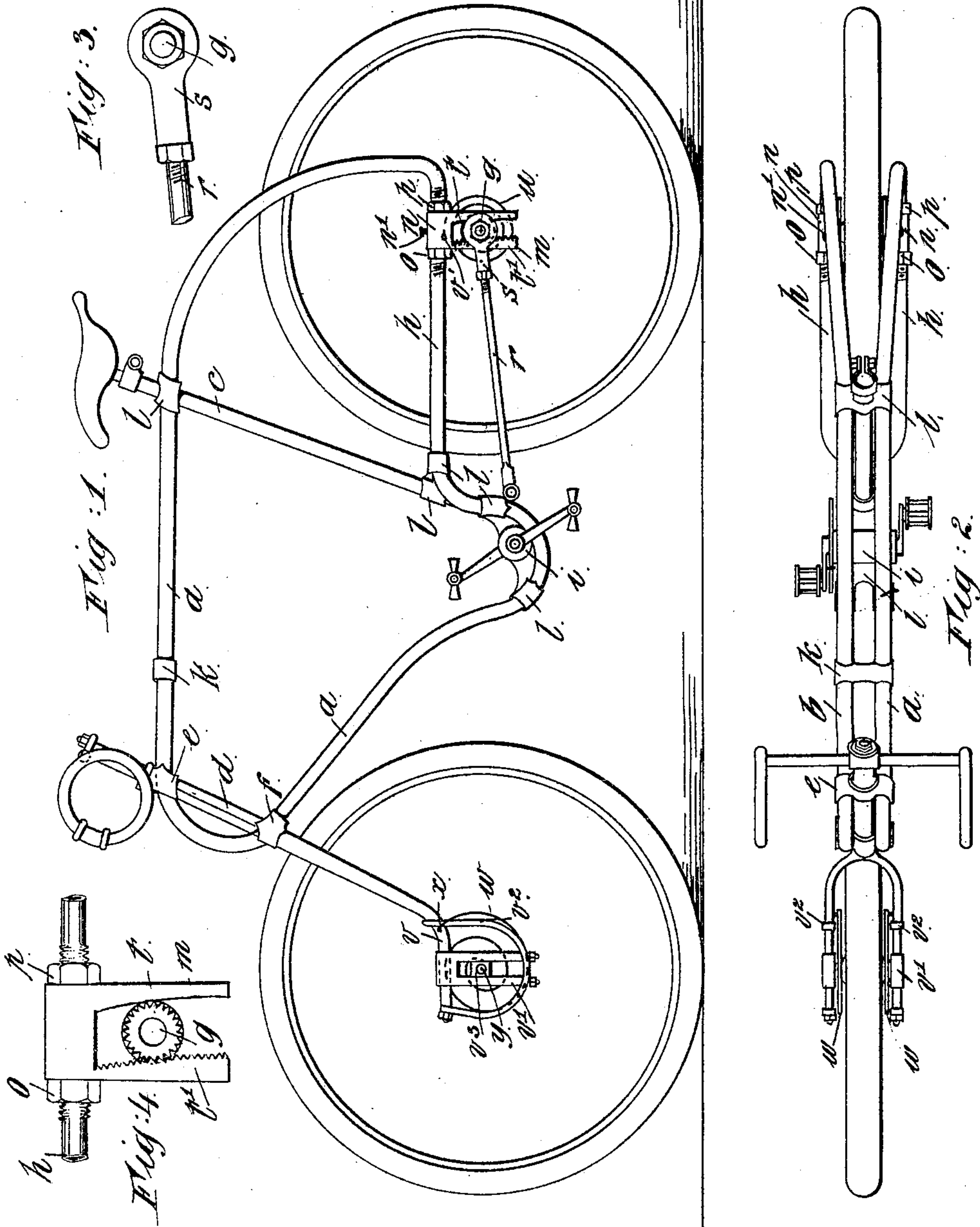
No. 633,121.

Patented Sept. 19, 1899.

A. J. CUMING.  
SPRING FRAME FOR BICYCLES.

(Application filed Sept. 29, 1897.)

(No Model.)



Witnesses  
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# UNITED STATES PATENT OFFICE.

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## SPRING-FRAME FOR BICYCLES.

SPECIFICATION forming part of Letters Patent No. 633,121, dated September 19, 1899.

Application filed September 29, 1897. Serial No. 653,497. (No model.)

*To all whom it may concern:*

Be it known that I, ARTHUR JOHN CUMING, journalist, a subject of Her Majesty the Queen of Great Britain and Ireland, and a resident of 71 Cathedral Square, Christchurch, in the provincial district of Canterbury, in the Colony of New Zealand, have invented a new and useful Improved Spring-Frame for Bicycles, of which the following is a specification.

This invention provides an inexpensive mode of constructing the frames of safety-bicycles, the resulting article being stronger and an effective arrangement of springs between the frame and the wheel-spindles, whereby vibration is diminished.

In the accompanying drawings, Figure 1 is a side elevation, and Fig. 2 a plan, of a bicycle according to my invention; Fig. 3, a side detail elevation of the adjustable end of a stay-rod, and Fig. 4 a side detail elevation of a guide-bracket and roller.

Similar letters of reference indicate the same parts in all the figures.

My cycle-frame is mainly composed of two separate continuous tubes *ab*, one upon either side of the seat-pillar *c* and steering-head *d*, to which they are connected by brazing, riveting, or other usual means. Each tube is bent into a semicircular shape at the front of the machine and is supported on each side by the brackets *e f*, carrying, respectively, the top and bottom ball-races of the steering-head. From the top ball-race bracket *e* to the seat-pillar *c* each tube is approximately straight and horizontal. It then curves rearwardly and downwardly to behind and just above the driving-wheel spindle *g*. From the bottom ball-race bracket *f* each tube is carried in a convenient curve beneath the usual position of the bottom bracket. It then curves upwardly, and a horizontal straight portion *h* is carried above the spindle of the driving-wheel to meet the other end of the tube, to which it is connected by brazing. The bottom bracket *i* rests across and is brazed upon the tubes *a b* in a position where they are bent downwardly to receive it, as shown. Bridge-pieces *k* connect the frame-tubes *ab* in as many places as may be necessary for strengthening purposes. The upper and lower ends of the seat-pillar tube and also the bottom bracket have brackets *l*, which are fixed across and tie the frame-tubes together. Vertical guides *m* upon either side of the machine are formed upon sliding sockets *n*, having set-screws *n'*

and adjustable upon the straight portions *h* of the tubes *ab*, which are screwed and provided with adjusting-nuts *o p*. Stay-rods *r*, secured at one end to the bottom bracket by pins passing through eyes, are connected at their other ends to the opposite sides of the spindle *g*, screwed sockets *s* (shown in detail Fig. 4) upon the screwed ends of the stays permitting the length of the latter to be regulated. The opposite ends of spindle *g* each carry a toothed roller *t*, which gears into a toothed rack *t'*, formed upon one side of the guides *m*. Spiral springs *u*, secured upon the spindle *g* upon both sides of the machine, have their outer ends secured to pins *v'*, fixed to sockets *n* or any convenient part of the frame.

By means of the adjusting-nuts *o p* the driving-wheel may be adjusted to regulate the tension of the driving-chain, when such is employed, or for any other purpose.

The toothed racks *t'* are made to a curve of large radius to allow the spring-frame to alter its position without unduly straining the stay-rods *r*. The tooth-rollers, fixed upon opposite ends of spindle *g* and gearing in the racks upon both sides of the machine, insure that movement up or down of the frame upon one side causes a corresponding movement of the frame upon the other. The fork *v* has upon each leg a depending guide-bracket, strengthened by the curved stay-tube *v<sup>2</sup>*, which is secured at both ends to the leg, the brackets being bifurcated to form guides for motion-blocks *v<sup>3</sup>*, carrying the ends of the steering-wheel spindle *y*. Springs *w* upon either side surround and are secured to the spindle at one end and to pins *x* upon the forks at the other.

What I claim as my invention, and desire to secure by Letters Patent, is—

In combination, in a bicycle, the rear wheel, the frame having the horizontal rear part *h*, the forked bracket depending from the said horizontal part and adjustable thereon by the nuts and thread, the axle for the rear wheel movable in the said forked bracket, the pivoted stay *r* having an adjustable part engaging the axle and the spring between the axle and the frame, substantially as described.

Dated this 1st day of September, 1897.

ARTHUR JOHN CUMING.

Witnesses:

J. W. JONES,

W. B. CUMING.