

(No Model.)

3 Sheets—Sheet 1.

L. H. DONKEL.

VELOCIPÈDE.

No. 884,134.

Patented June 5, 1888.

Fig. 1.

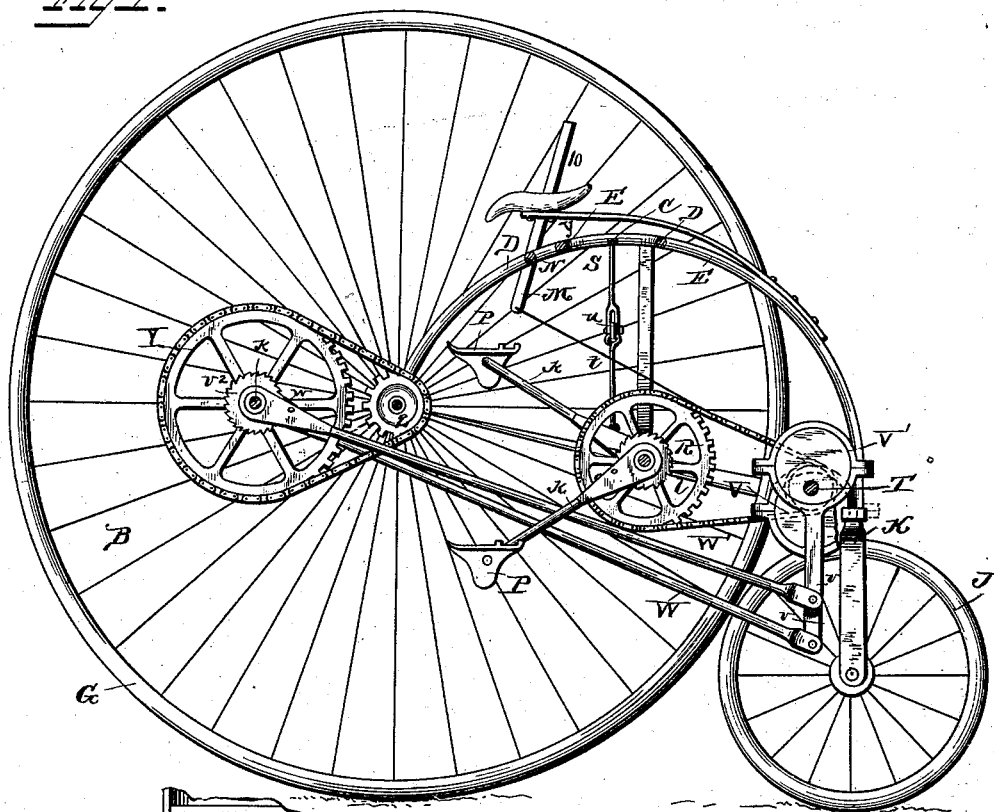
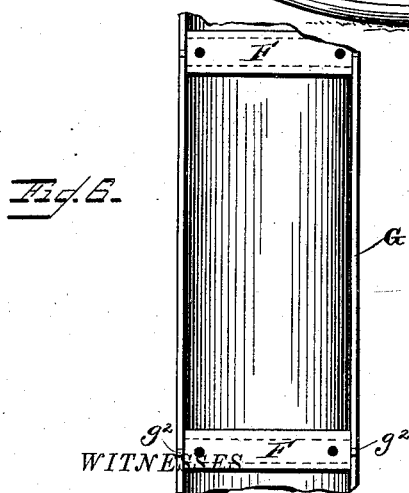
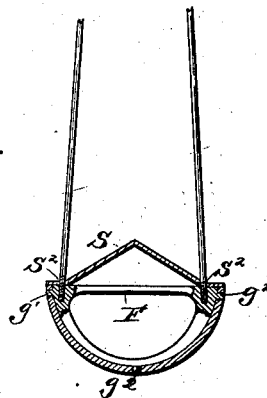


Fig. 6.



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Fig. 7.

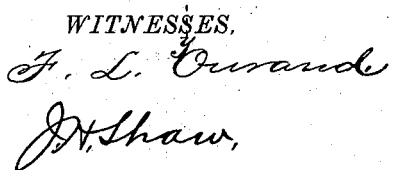


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3 Sheets—Sheet 2.

No. 384,134.

Patented June 5, 1888.



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3 Sheets—Sheet 3.

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Fig. 8.

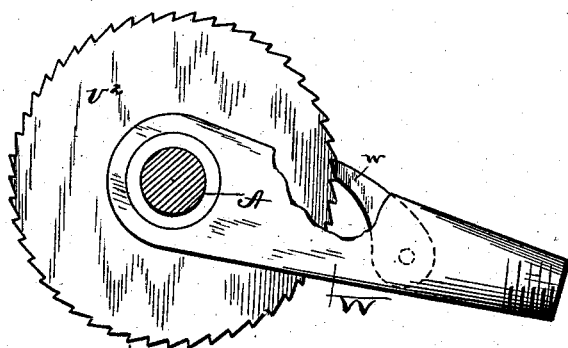


Fig. 9.

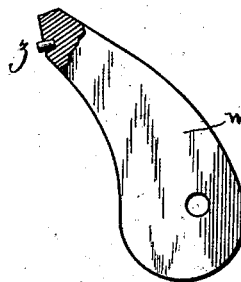


Fig. 10.

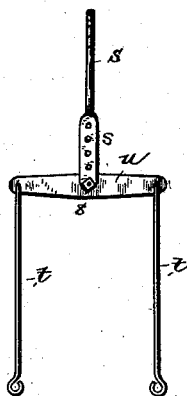


Fig. 11.

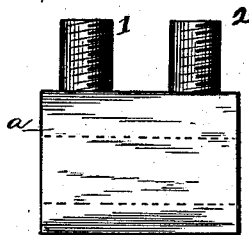
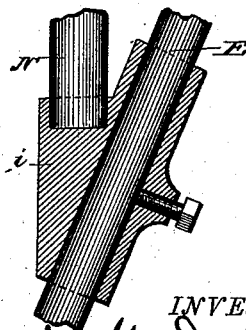


Fig. 12.



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UNITED STATES PATENT OFFICE.

LLOYD H. DONKEL, OF WINTER PARK, FLORIDA.

VELOCIPEDÉ.

SPECIFICATION forming part of Letters Patent No. 384,134, dated June 5, 1888.

Application filed September 26, 1887. Serial No. 250,703. (No model.)

To all whom it may concern:

Be it known that I, LLOYD H. DONKEL, a citizen of the United States, residing at Winter Park, in the county of Orange and State of Florida, have invented certain new and useful Improvements in Velocipedes; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

The invention relates to four-wheeled velocipedes; and it consists in the construction and novel combination of parts, as hereinafter fully described and claimed.

In order that the invention may be fully understood, I will proceed to describe it with reference to the accompanying drawings, in which—

Figure 1 is a side elevation of my improved machine. Fig. 2 is a plan view of the same. Figs. 3 to 12, inclusive, are detail views of certain parts of the machine, hereinafter referred to.

In the said drawings, A designates the front or driving axle, and T the rear cross-bar of the frame, which consists of the arched piping C, extending from boxes *a* upon the main axle backward to boxes *b* at the rear portion of the machine. This frame is braced by cross-pipes D D E E, running to boxes *a a b b* and meeting at their middle in a union, *c*. The pipes C are also braced by a rod, *C'*, extending from the boxes *a a* to the boxes *b b*, so as to prevent springing, as shown in Fig. 1. The spokes of the large or drive wheels B B are of spring-steel, and are secured to the hub H by being passed through slots *d* in cap I and having heads or shoulders *e* at their ends, which lie within a recess, *f*, in said cap. The cap I fits over the hub H, and is secured thereto by a nut, *h'*, and also by bolts *h''*, which pass through holes *h*, which are countersunk into the cap, and the whole keyed to the main shaft A, as shown. The spokes cross each other, running from the ribs in the tire to the opposite side of the hub, and the end in the hub has a head or shoulder which rests in a slot, while the end in the rim is screwed therein till the spoke is perfectly tight in the hub.

The tires G of the wheels have each an angular piece, S, made of thin spring-steel, fit-

ting entirely around the inside of the rim and held in place by the spokes passing through holes S², corresponding with the holes in the ribs F. This construction prevents loose sand from falling into the concave portion of the rim and avoids any liability of the wheels to throw sand over the machine.

I have deemed it proper to give the foregoing description of the wheel used in connection with the running-gear propelling devices; but I make no claim to the special construction of said wheel herein, as the construction thereof properly belongs to improvements in wheels, and will be presented in a separate application.

P P designate the pedals, which are secured to levers K K, which are loose upon a shaft, N'. Ratchets *l l* upon this shaft receive the motion of the pedals and communicate the same to the sprocket-wheel R on said shaft N', which is suspended from the cross-pipes D E. The revolution of the wheel R is communicated by a drive-chain, *r*, to a sprocket-wheel, S, on the rear shaft, T, which is mounted in the same manner as the shaft N. The power is then applied by two alternate eccentrics, V V', to levers *v v'*, which are connected to the levers W W'. The levers W W' in turn convey the power to the ratchets *v'' v''*, which are rigidly connected to the shaft X. The shaft X is supported upon an extension, X', from the forward part of the frame, and is braced by an arched pipe, *c'*, secured to lugs *e' e'* and cross-braces D E, respectively. The extension X' is further braced by braces *c'' c''*, extending from the center of the braces *c' c'* to lugs on the frame X' over the axle A.

Y designates a sprocket-wheel, which is keyed upon the shaft X, and a chain-belt, *x*, runs from the wheel Y to a sprocket-wheel, Z, upon the main axle A.

The boxes *a a b b* have screw-threaded lugs 1 2 cast thereon for the reception of the frame-pipes C D E, as shown in Fig. 11.

In order to insure a positive alternating motion for the pedal-levers *k k*, a support or hanger, S, is secured to the bottom of the union *c*, and a rock-shaft, *u*, is adjustably pivoted by a pin, 8, passing through holes *s* in the lower portion of said hanger. Rods *t t* depend from the ends of the rock-shaft *u* and are connected

to the pedal-levers K. The purpose of the adjustable connection between the hanger S and shaft *u* is to accommodate the pedals to different lengths of the limbs. The pawls *w* have
 5 fitted on their ends a small piece of leather or rubber, 3, as shown in Fig. 9, so as to render the ratchets noiseless. The seat is supported by two bars, Y, of spring-steel, which are secured at their ends to the cross-pipes D E.

10 The machine is guided or steered by the hand-lever 10, which is rigidly secured to a shaft, N, upon which are two short levers, M M', from which rods *t t* extend backward to arms L upon the pivoted boxes *b* of the rear
 15 wheels.

In lieu of pipes, the frame-work may be constructed of thin spring-steel tubes, thus cheapening the frame and rendering it lighter and stronger. Thus it will be seen that the machine is light, strong, and durable, and that
 20 the power is directly applied.

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

25 1. In a velocipede, the vehicle-frame composed of the arched tubular sections C, D, E, *c'*, *c''*, and *x'*, constructed and arranged substantially as described.

2. The combination, with the tubular frame, constructed substantially as described, of the 30 pedals, the ratchets *v' v''*, the eccentrics V V', the sprocket-wheels R Y, and the belts S Z, substantially as specified.

3. In a velocipede, the combination, with the frame thereof, of the alternating device 35 comprising the hanger provided with the adjustable rock-shaft and links for connecting the same with the pedals, substantially as specified.

4. The combination, with the frame of the 40 velocipede, of the curved bars supporting the seat upon the cross-sections of the frame, substantially as specified.

5. In a velocipede, the combination, with the ratchets, of the pawls *w*, provided on their 45 ends with rubber or leather pieces 3, substantially as specified.

In testimony whereof I affix my signature in presence of two witnesses.

LLOYD H. DONKEL.

Witnesses:

J. S. CAPEN,
 HENRY S. CHUBB.