

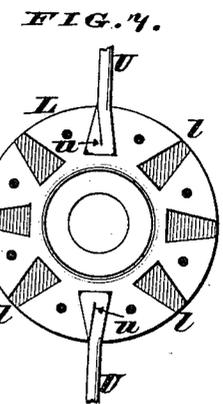
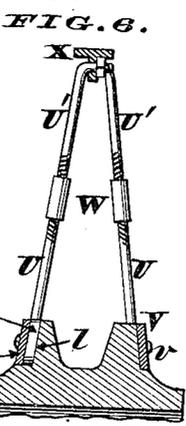
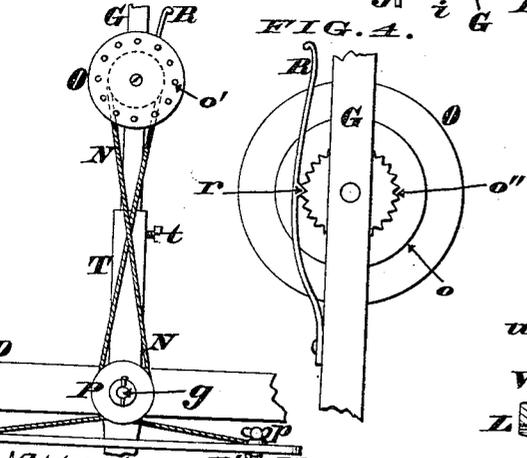
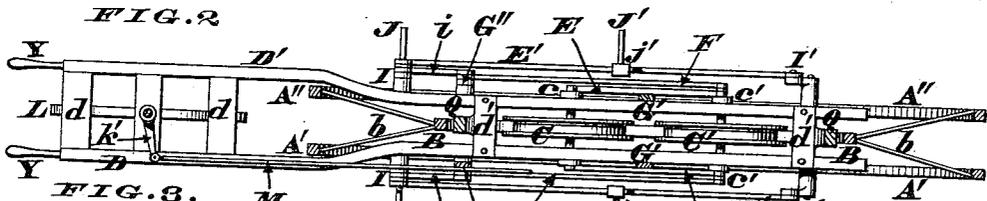
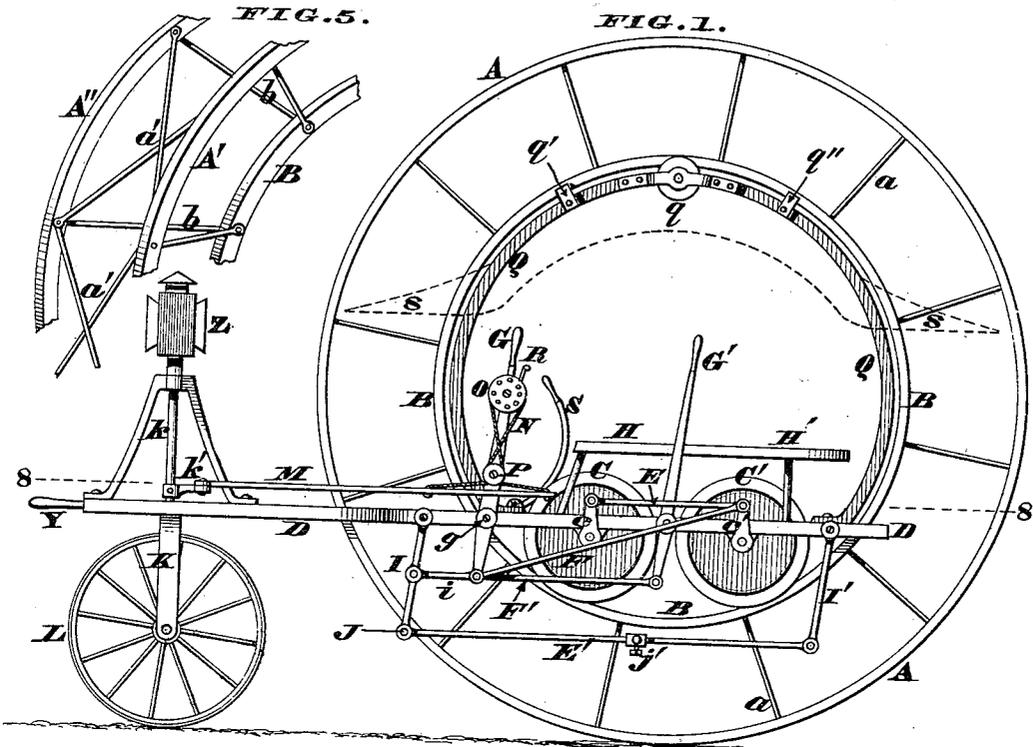
(No Model.)

2 Sheets—Sheet 1.

J. S. CARR
VELOCIPEDE.

No. 273,815.

Patented Mar. 13, 1883.



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(No Model.)

2 Sheets—Sheet 2.

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FIG. 8.

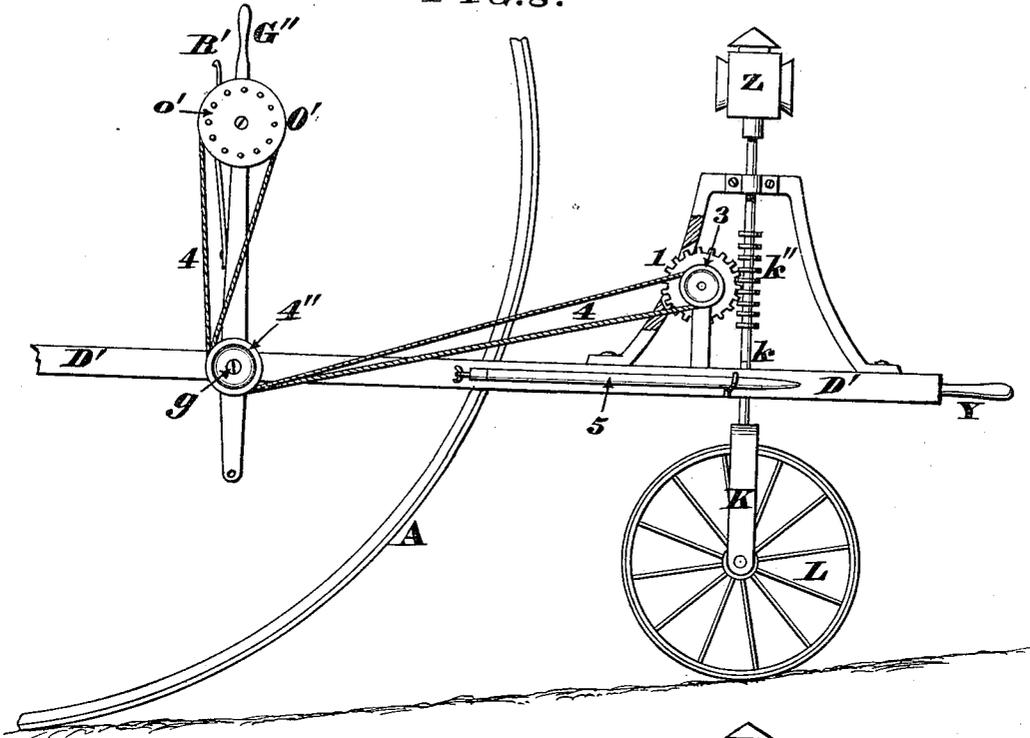


FIG. 10.

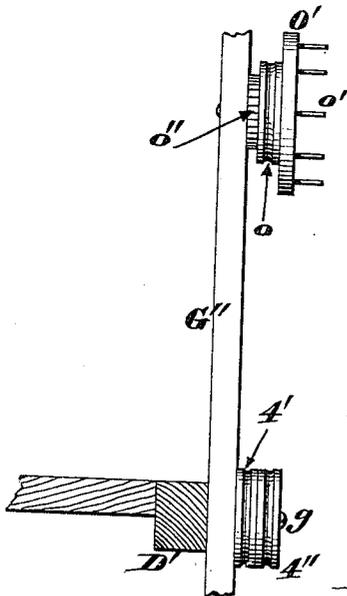
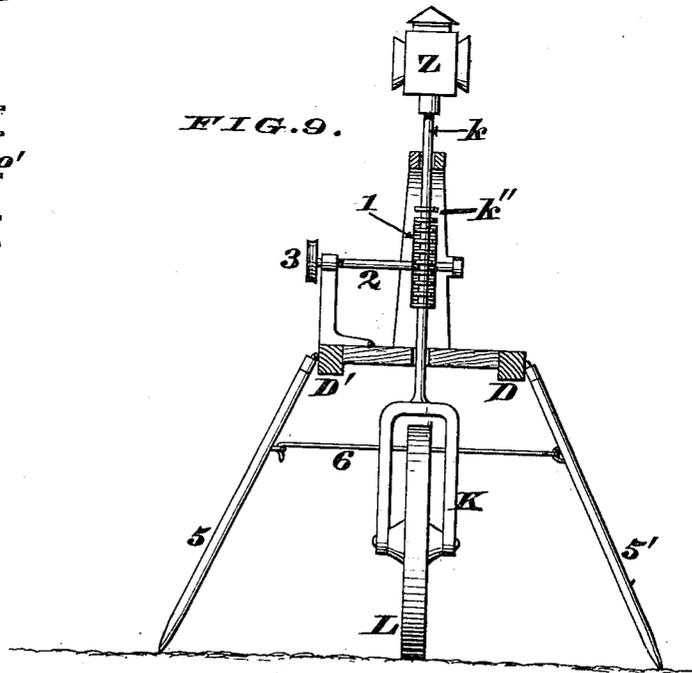


FIG. 9.



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UNITED STATES PATENT OFFICE.

JEROME S. CARR, OF CINCINNATI, OHIO.

VELOCIPEDE.

SPECIFICATION forming part of Letters Patent No. 273,815, dated March 13, 1883.

Application filed August 14, 1882. (No model.)

To all whom it may concern:

Be it known that I, JEROME S. CARR, a citizen of the United States, residing at Cincinnati, in the county of Hamilton and State of Ohio, have invented certain new and useful Improvements in Velocipedes, of which the following is a specification.

The driving-wheel proper of my velocipede is attached by spokes to an inner and hubless concentric ring or rim of somewhat less diameter, power being applied to said inner ring either by friction-wheels or gearing operated by a system of hand and foot levers, one of the hand-levers being provided with devices for guiding the pilot-wheel of the vehicle, as hereinafter more fully described, and pointed out in the claims.

My invention further consists in so arranging these hand and foot levers as to enable two riders to act in unison in propelling the velocipede, as hereinafter more fully described, and pointed out in the claims.

Furthermore, my invention comprises a novel construction of the driving-wheel, whereby a broad wheel-base is afforded without adding materially to the weight of the vehicle or to its cost of manufacture, as hereinafter more fully described.

Another feature of my invention consists in rendering the pilot-wheel vertically adjustable, in order that the main frame and its attached seat may be preserved in a horizontal position when the velocipede is either ascending or descending a grade, this adjustment being preferably effected by means of suitable devices applied to one of the hand-levers of the vehicle, as hereinafter more fully described.

In the annexed drawings, Figure 1 is a side elevation of my form of velocipede adapted for use on level ground. Fig. 2 is a horizontal section of the same, taken at the line 8 8 of Fig. 1. Fig. 3 is an elevation of the devices that shift the pilot-wheel of the vehicle. Fig. 4 is an enlarged rear elevation of the operating-disk of said devices. Fig. 5 is a perspective view of a modified form of the driving-wheel. Fig. 6 is a vertical section of a portion of the pilot-wheel. Fig. 7 is a front elevation of the hub of said wheel, two of the spokes being shown inserted therein. Fig. 8 is a side elevation of the forward portion of a veloci-

pede adapted for use in a hilly country, the vehicle being shown in the act of ascending a grade. Fig. 9 is a transverse section of the same, taken in the plane of the pilot-wheel spindle, the side props being shown arranged so as to keep the vehicle erect. Fig. 10 is an enlarged elevation of the hand-lever that carries the devices for effecting a vertical adjustment of the pilot-wheel.

My velocipede is propelled by a driving-wheel, A, of any suitable size—say six or more feet in diameter—and is connected by radial spokes *a* to an inner and concentric ring or rim, B, of somewhat less diameter—say about five feet. Adapted to rest on the inner periphery of this rim or ring are two grooved friction-wheels, C C', journaled in the side bars, D D', of the main frame of the vehicle, said wheels being provided, respectively, with cranks *c c'*, united by a connecting-rod, E. One of these cranks, and preferably the rear one, *c'*, is connected by a pitman, F, to the shorter arm of a lever, G, the latter being pivoted at *g* to the side bar D, and having its upper end so disposed as to be readily grasped by the rider who occupies the seat H, which seat may be supported on springs. The shorter arm of lever G is coupled by a link, *i*, to a counter-lever, I, the upper end of which is fulcrumed to side bar D, while the lower end of said counter-lever has a horizontal pin, J, to receive the thrust of the rider's foot. The front ends of side bars, D D', are united by braces *d d'*, within one of which is fitted the spindle *k* of a forked bearing, K, that carries the pilot-wheel L, the peculiar construction of which latter is more clearly seen in Figs. 6 and 7. Attached to this spindle *k* is a crank or arm, *k'*, to the free end of which is coupled a rod, M, the rear portion of the latter being supported by a rope or chain or other flexible device, N. The central portion of this rope is engaged over a pulley, *o*, on the rear of a disk, O, said disk being pivoted near the upper end of hand-lever, G. Said rope or chain is then carried down, crossed, and after passing under pulley P the opposite ends of the rope are secured to bar M at *n n'*, the attachment *n* being permanent, while the fastening *n'* is capable of adjustment in proportion as the handle G is either lengthened or shortened to suit the stroke of

the rider. After being properly adjusted the end n' of the rope is secured with a screw-clamp, p , or otherwise. In Fig. 1 the pulley P has, for the clearness of illustration, been shown as situated above the pivot g ; but in practice it should be journaled on said pivot, as in Fig. 3, in order that the rope N may not be affected by the oscillations of hand-lever G. The front of disk O is armed with projecting pins o' , while the extreme rear of said disk is toothed at o'' to admit the detent r of a spring R, the upper end of the latter being convenient for the hand of the rider. Attached to the braces d' of the frame is a curved reach, Q, of less diameter than the rim B, the upper part of said reach having journaled in it a grooved roller or wheel, q , bearing against the inner surface of said rim.

q' q'' are guards secured to the reach Q for the purpose of relieving the roller q of any injurious lateral strain.

S is a brake to operate against the front friction-wheel, C.

The dotted line s represents a hood or canopy attached to the reach Q to screen the rider from the inclemencies of the weather.

The above describes a more simple form of velocipede adapted to be propelled by a single rider who manages the implement by grasping the opposite hand-levers G G'', resting his feet on the pins J J, and then pulling on said handles and pushing against the pins. It is evident this double action of levers G G'' and I I causes the coupled friction-wheels C C' to revolve within their bearings in frame D D', which motion is transferred to rim B and its attached driver A. Now, assuming the wheel A to be six and a half feet in diameter and the ring B to be five feet in diameter, it is apparent that when the wheels C C' have caused said ring to make one revolution and travel fifteen feet the driver A will have advanced the velocipede nineteen and a half feet, and by simply increasing the difference between the diameters of the two rings A and B a corresponding increase of speed will be effected, or the same results may be produced by employing gearing in connection with the wheels C C'. When it is desired to change the course of the vehicle, spring R is pressed back so as to disengage its detent r from the teeth o'' , thereby leaving the disk O at liberty to be turned in either direction by simply drawing upon or pushing against the pins o' with the rider's fingers. The proper change of course having been thus effected, the detent r is allowed to snap into the toothed wheel o'' and retain the pilot-wheel at the desired angle. If the rim B is five feet in diameter, ample room will be afforded for two riders, who can be accommodated by extending the seat rearwardly, as at H', and pivoting to the side bar D a hand-lever, G', coupled to the lower arm of lever G by a pitman, F'. The rear rider thrusts his foot against a pin, J', projecting laterally from a slide, j' , capable of being adjustably secured on a rod,

E', that couples lever I to a lever, I', the upper end of the latter being pivoted to the side bar D. By this simple arrangement the rear rider can assist the front one in propelling the velocipede; but the party occupying the seat H must guide the vehicle.

Whether the vehicle is adapted to be run either by one or two riders the arrangement of cranks, connecting-rods, levers, &c., seen in Fig. 1 must be duplicated on the other side of the velocipede, as represented in Fig. 2. Furthermore, it will be noticed that the velocipede, whether constructed for a single rider or for two of them, is so arranged as to locate the seat H near the ground, thereby insuring a low center of gravity, no matter how large the driving-wheel may be. Consequently such a velocipede can be run at an unusually high speed, and yet be less liable to upset than an ordinary velocipede with a four-foot driver. In order to adapt the sweep of hand-lever G to the stroke of any rider, I prefer fitting said lever in a socket, T, and retaining it therein by a set-screw, t , or otherwise, said socket having the pitman F and link i coupled to its lower end. (See Fig. 3.)

Instead of employing a single driving-wheel, A, as represented in Fig. 1, two of such wheels, A' A'', of the same diameter may be placed opposite each other, and be united to the ring B by spokes b , as seen in Figs. 2 and 5. These parallel wheels A' A'' may be still further stiffened by a system of diagonal braces, a' . By this construction an extended wheel-base is afforded, which adds to the stability of the velocipede without materially increasing its weight or cost of manufacture.

In the preferred construction of the pilot-wheel, as seen in Figs. 6 and 7, the hub is made with a series of sockets or mortises, l , wider at their inner than at their outer ends. The inner ends of the central sections, U, of the spokes are bent back on themselves, and then swaged up so as to form heads u , capable of dovetailing accurately in the sockets l .

V are retaining-plates, clamped to the hub by screws or bolts v , so as to prevent the spokes slipping out of their respective flaring sockets. The inner sections, U, of the spokes are coupled to the outer sections, U', by swivels W, that engage with the reverse threads on said sections, in order that the latter may be drawn together or separated, as occasion may require. Consequently these spokes can be adjusted longitudinally to prevent rattling, and cause the tire X to preserve its proper position relatively to the hub, to which tire the outer sections, U', of said spokes may be attached in any suitable manner.

Y are handles attached to the frame D D', to enable the velocipede to be wheeled up an unusually steep grade.

Z is a lamp attached to the spindle k of the pilot-wheel, the standards for which spindle may be surrounded with a wire basket or pouch in which to carry small packages, &c.

By attaching this lamp to the pilot-wheel spindle light will be projected along the path of said wheel when it is guided either to the right or left.

5 The spokes or arms *a* and *b* may be screw-threaded to receive nuts for the purpose of preserving the wheel *A* at the proper distance from ring *B*, and to prevent rattling of these two important members of the velocipede.

10 The vehicle just described will answer very well on ordinary grades; but for a hilly country I modify the construction, as seen in Figs. 8 and 9—that is to say, the spindle *k* of the pilot-wheel *L* is rendered vertically adjustable
15 by a series of annular teeth or collars, *k''*, that engage with a gear-wheel, 1, on the inner end of a shaft, 2, the outer end of the latter having a pulley, 3, to receive a chain or rope, 4. This rope, after passing around two independent
20 pulleys, 4' 4'', journaled on the pivot *g* of hand-lever *G''*, engages with a pulley, *o*, on the disk *O'*, near the upper end of said lever. This disk has projecting pins *o'*, teeth *o''*, and a spring, *R'*, which operate in the same manner
25 as the corresponding devices seen in Figs. 3 and 4. By properly rotating disk *O'* the spindle *k* can be either raised or lowered, so as to keep the main frame and seat of the velocipede perfectly level either when ascending or de-
30 scending a grade, the annular teeth *k''* being constantly in gear with the wheel 1, no matter how far said spindle may be turned to the right or left.

5 5' represent props coupled to the frame *D*
35 *D'*, and capable of being swung down at the sides of the same, so as to keep the velocipede erect when not in use.

6 is a hook uniting said props, so as to preserve them in their distended position. (See
40 Fig. 9.)

I claim as my invention—

1. A velocipede the driving-wheel of which is secured to an inner concentric ring of less diameter, to which inner ring the power is applied by friction-wheels or gearing actuated
45 by a system of hand and foot levers, one of said hand-levers being provided with devices for guiding the pilot-wheel of the vehicle, substantially as herein described.

50 2. A velocipede composed of a driving-wheel attached to an inner concentric ring of less diameter, and a frame supported on a pilot-wheel, and a pair of friction-wheels, which

latter serve to impart motion to said inner ring, and are actuated by a system of hand
55 and foot levers applied to said frame, substantially as herein described.

3. The frame *D D'*, supported on a pilot-wheel, *L*, and a pair of friction-wheels, *C C'*, which wheels *C C'* actuate the inner concentric
60 ring, *B*, of driver *A*, said frame being provided with a curved reach, *Q*, having at top a roller, *q*, and guides *q' q''*, substantially as described.

4. The hand-lever *G*, having pivoted to it a disk, *O*, provided with pulley *o* and a series
65 of pins, *o'*, a rope or chain, *N*, being passed around said pulley *o*, and also around another one, *P*, and then fastened to the bar *M* in the manner described, and for the purpose set
70 forth, said pulley *P* being journaled on the fulcrum *g* of said hand-lever, as explained.

5. The combination of swinging hand-lever *G*, pivoted disk *O o o'*, toothed wheel *o''*, spring-catch *R r*, rope *N*, and pulley *P*; wherewith is
75 shifted the bar *M*, for the purpose described.

6. In combination with friction-wheels *C C'*, operating as described, the connecting-rods *E E*, pitmen *F F*, pivoted hand-levers *G G''*, links *i i*, and counter-levers *I I*, the free ends
80 of the latter being provided with pins *J J*, for the purpose described.

7. In combination with friction-wheels *C C'*, operating as herein described, the connecting-rods *E E*, *E' E'*, pitmen *F F*, *F' F'*, hand-levers
85 *G G' G' G'' g*, links *i i*, counter-levers *I I*, *I' I'*, fixed foot-rests *J J*, and shiftable foot-rests *J' j'*, *J' j'*, wherewith two riders can propel the velocipede, as herein described.

8. The parallel driving-wheels *A' A''*, of uniform diameter, connected to the inner and
90 hubless concentric ring, *B*, of less diameter, by a system of spokes, *b*, and braces *a'*, said hubless ring having the power applied thereto, as herein described.

9. The combination of pilot-wheel spindle
95 *K k k''*, gear-wheel 1, shaft 2, pulley 3, rope 4, disk *O' o*, hand-lever *G''*, and independent pulleys 4' 4'', which latter are journaled on the fulcrum *g* of said hand-lever, for the purpose
100 described.

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

JEROME S. CARR.

Witnesses:

JAMES H. LAYMAN,
SAML. S. CARPENTER.