(No Model.) 2 Sheets—Sheet 1.

G. KIBBE.

VELOCIPEDE.

No. 386,990. Patented July 31, 1888.

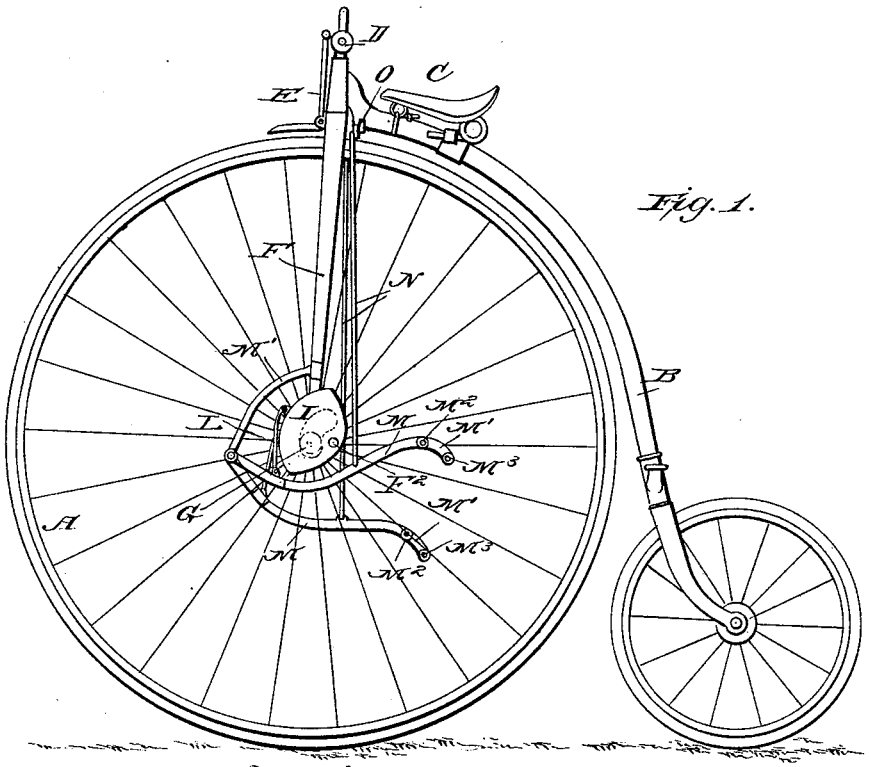

Fig. 1.

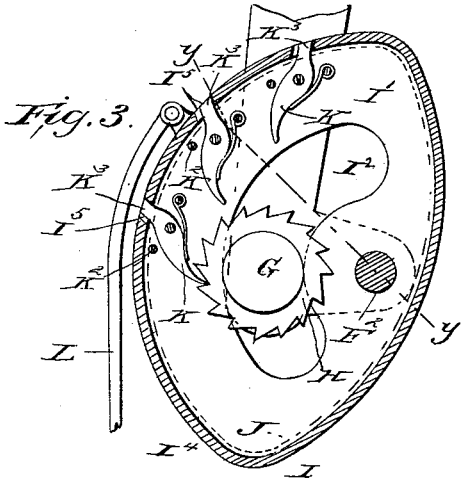

Fig. 3.

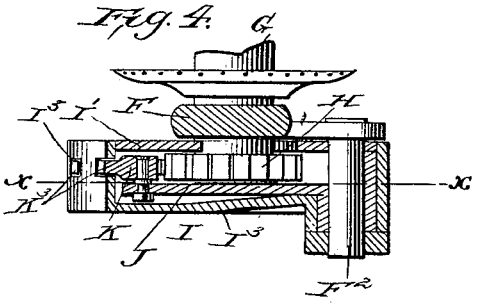

Fig. 4.

WITNESSES:

W. R. Davis

C. Sedgwick

INVENTOR:

G. Kibbe

BY Munn & Co.

ATTORNEYS.

(No Model.) 2 Sheets—Sheet 2.

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Fig. 2.

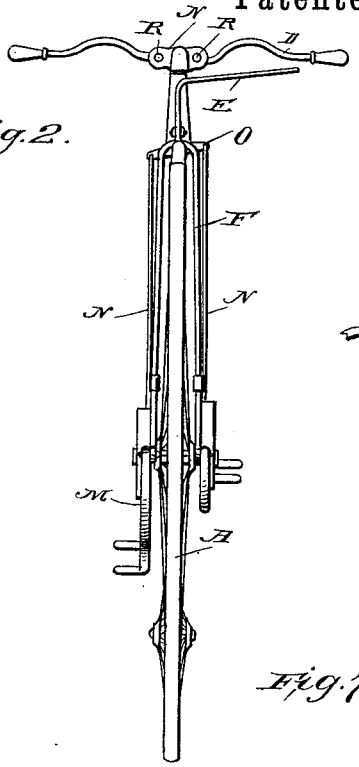


Fig. 5.

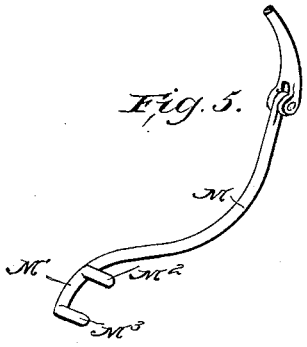


Fig. 6.

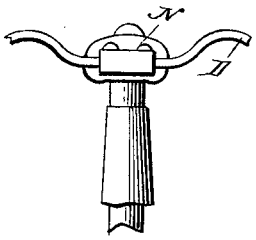


Fig. 7.

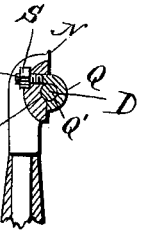
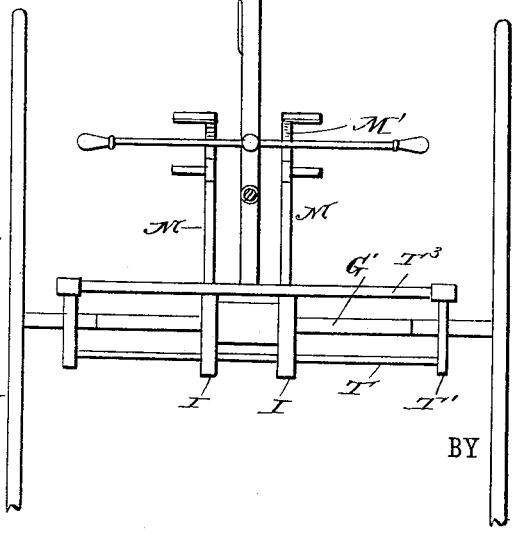


Fig. 8.



WITNESSES:

W. R. Davis.

C. Sedgwick

INVENTOR:

G. Kibbe

BY

Munn & Co.

ATTORNEYS.

UNITED STATES PATENT OFFICE.

GEORGE KIBBE, OF AMSTERDAM, NEW YORK.

VELOCIPEDE.

SPECIFICATION forming part of Letters Patent No. 386,990, dated July 31, 1888.

Application filed December 13, 1887. Serial No. 257,781. (No model.)

To all whom it may concern:

Be it known that I, GEORGE KIBBE, of Amsterdam, in the county of Montgomery and State of New York, have invented a new and useful Improvement in Velocipedes, of which the following is a full, clear, and exact description.

The object of this invention is to render the propulsion of velocipedes easier and their movement steadier, to provide for a convenient variation of the effective driving force in accordance with the resistance to be overcome, and to strengthen and otherwise improve the steering device.

The invention consists of a novel form of pedal-levers and driving mechanism operated thereby, and of a peculiar construction and arrangement of the steering-head and cross-bar, substantially as hereinafter described, and distinctly pointed out in the claims.

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

Figure 1 is a side elevation of a bicycle embodying the various features of my improvement. Fig. 2 is a front elevation of the same. Fig. 3 is a transverse sectional elevation on the line *x x*, Fig. 4, of the improved driving mechanism of the same. Fig. 4 is a cross-sectional view of the said driving mechanism on the line *y y*, Fig. 3. Fig. 5 is a detail perspective view showing one of the improved pedal-levers of the machine. Fig. 6 is a rear view of the steering-head of the machine. Fig. 7 is a side sectional elevation of the said steering-head. Fig. 8 is a plan view of a tricycle provided with my improved driving-gear.

Referring to Figs. 1 to 7, the drive-wheel A, backbone B, saddle C, steering-bar D, brake E, and forked standard F, having the bearings for the drive-axle G, may be of the ordinary or any approved description.

On each end of the axle G is fixed a ratchet-wheel, H, and the lower end of each branch of the forked standard F is provided with a rearward-projecting lug carrying a pin, F^2, to which is pivoted a hollow vertically-rocking case, I, at its rear edge.

The inner vertical side wall, I′, of the case works between the ratchet-wheel H and the standard, and has a segmental slot, I^2, to receive the axle, said slot being formed on a curve, of which the pin F^2 is the center.

The outer vertical wall, I^3, of the case covers the ratchet-wheel and the end of the axle, and the forward wall or rim, I^4, is curved concentrically with the slot I^2.

To the pin F^2 within the case I is also pivoted a plate, J, of such size as to have a slight vertical play therein, and to the inner face of the plate J are pivoted in a segmental row, also concentric with the slot I^2, a series of—in the present case three—pawls, K, which are normally held out of the way of the ratchet-wheel H when the plate J is rocked by springs, which press them against fixed stops K^2 on the plate.

The pawls K have tails K^3, which project into corresponding slots, I^5, in the rim of the case I, so that when the case is swung downward the tails of the pawls are pressed downward by the shoulders at the upper ends of the slots I^5, thereby causing the pawls successively to engage the ratchet-wheel and revolve the drive axle and wheel evenly and without any sudden jerks.

The forward rim of the case I has a lug connected by a link, L, with a rocking pedal-lever, M, which is pivoted to a bracket-arm, M′, fixed to the corresponding branch of the standard.

The two pedal-levers M, on opposite sides of the machine, are respectively connected by rods N with the ends of a transverse lever or "walking-beam," O, pivoted at its center to the frame of the machine above the drive-wheel, so that the pedal-levers will work alternately in the usual manner.

The rear end of each pedal-lever M is provided with a vertical curve or incline, M′, at both the head and foot of which are pedals M^2 M^3, which are at different distances from the front of the lever and can be used either at will, according as a greater or less force is required to drive the vehicle.

The head N on the upper end of the standard F is formed with a transverse groove or socket, O′, extending across its back, in which is received the central portion of the one-piece handle-bar D, and a clamp-piece, Q, having a transverse groove or socket, Q′, in its face and formed with forward-projecting screw-bolts R on either end, is set over the back of the

handle-bar against the head and its bolts R passed through apertures in the head and drawn tight by means of nuts S, so as to bind the handle-bar firmly to the head.

In the tricycle shown in Fig. 8 the pedal-levers M and cases I, containing the driving mechanism, are arranged, with respect to the axle G′, substantially as before described; but the cases are pivoted to rock on a transverse pivot-rod, T, mounted at the ends in brackets T′, which are fixed on a brace, T^3, on the frame of the machine. In some cases, however, in applying the herein-described improved driving mechanism to a tricycle, the driving-axle may be in two sections, having each a ratchet-wheel and carrying loose sleeves rigidly connected by a single pawl-carrying case. This case would then be rocked by the pedal-levers on the axle as a center, and the pawls, of which there would be one or one set for each ratchet-wheel, would alternately engage their respective wheels, so as to drive the machine with a uniform motion.

A hand-wheel may be applied, if desired, to the inside of the right-hand driving-wheel of the tricycle for starting the machine.

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

1. In a velocipede, the combination, with a drive-axle and its bearing, of a ratchet-wheel on the axle, a rocking case pivoted to the frame eccentrically to the axle, a pawl carried thereby and arranged to engage the ratchet-wheel, a pedal-lever, and connections for operating the rocking case thereby, substantially as described.

2. In a velocipede, the combination, with a drive-axle and its bearing, of a ratchet-wheel on the axle, a rocking case pivoted to the frame eccentrically to the axle, a pivotal plate on the axle of and adapted to play within the case, and tailed pawls pivoted to said plate, the case having shoulders arranged to bear upon the tails of the pawls and throw the same into engagement with the ratchet-wheel on the axle, substantially as described.

3. In a velocipede, the combination, with a drive-axle and its bearing, of a ratchet-wheel on the axle, a rocking case pivoted eccentrically to the axle, a series of pivotal pawls carried by the case and arranged in a segmental row having the pivot of the case as the center, a pedal-lever, and connections for operating the rocking case thereby, substantially as described.

4. A pedal-lever having a vertical curve or incline at its rear end and laterally-projecting pedals at both the head and the foot of said curve or incline at different distances from the pivotal point of the lever, as and for the purpose specified.

5. The combination, with the frame, the axle, the ratchets thereon, the transverse walking-beam O, the treadle-levers pivoted to the frame, and rods N N, pivoted to the ends of the said beam and to the treadle-levers, of the pins F^2, secured to the opposite sides of the frame in rear of the axle, the case I, mounted to rock on the said pins and having side slots, I^2, to receive the axle and peripheral slots I^5, the plates mounted on the pins F^2, to rock within the case I, and provided with segmental series of spring-pawls having tails projecting into the slots I^5, and the links L, connecting the rocking cases with the treadle-levers, substantially as set forth.

6. In a velocipede, the combination, with the steering-head N, having a transverse groove, O′, extending across the vertical face of its back, and two apertures extending through it at opposite sides of a central vertical line, of the clamp Q, having a groove on its inner face to register with groove O′, and two integral bolts projecting from one edge, and extending through the said apertures and provided with nuts, the opposite edge of the clamp resting against the back or face of said head, and the handle-bar held in place by said clamp, substantially as set forth.

GEORGE KIBBE.

Witnesses:
RICHARD PECK,
SAMUEL T. LEESON.