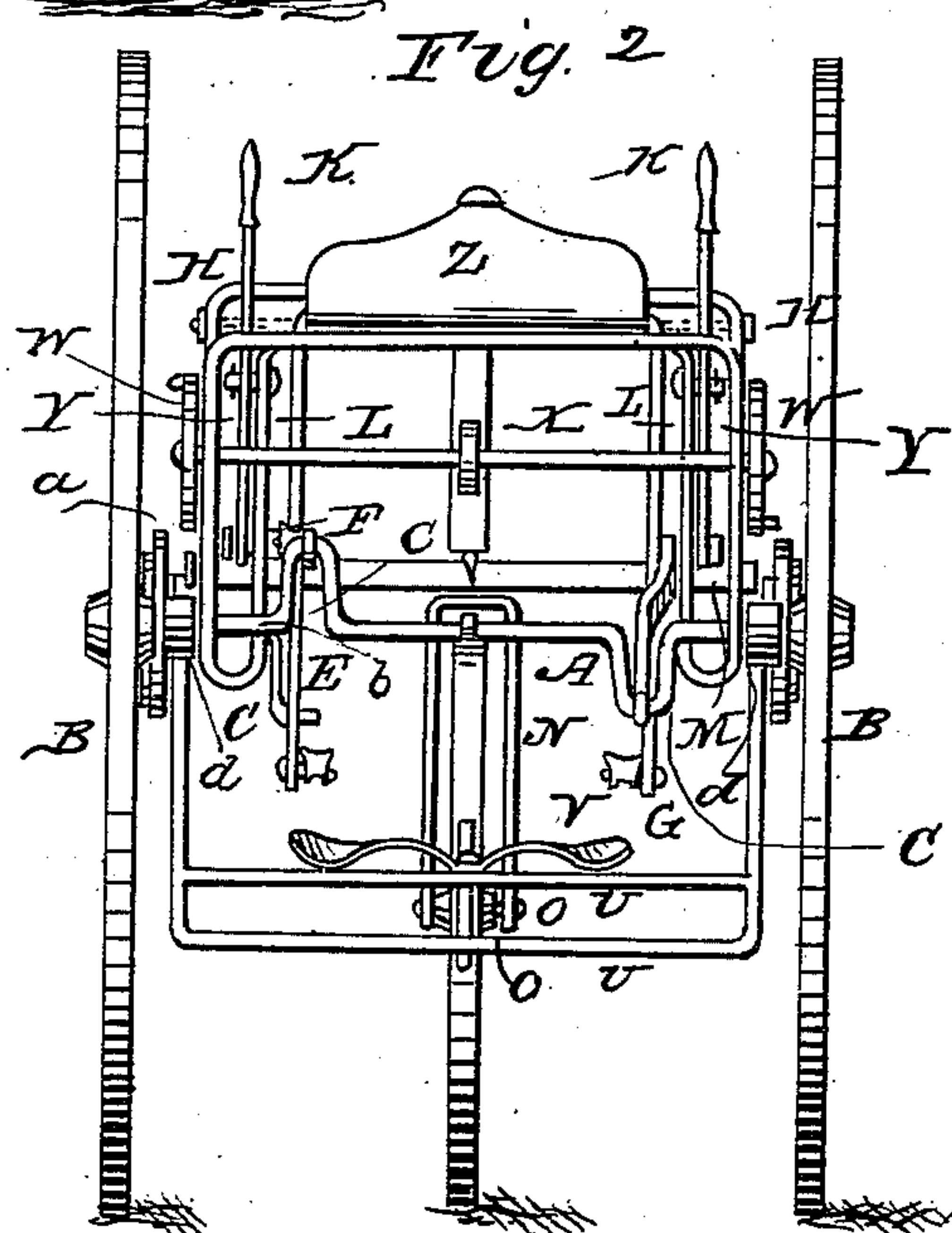
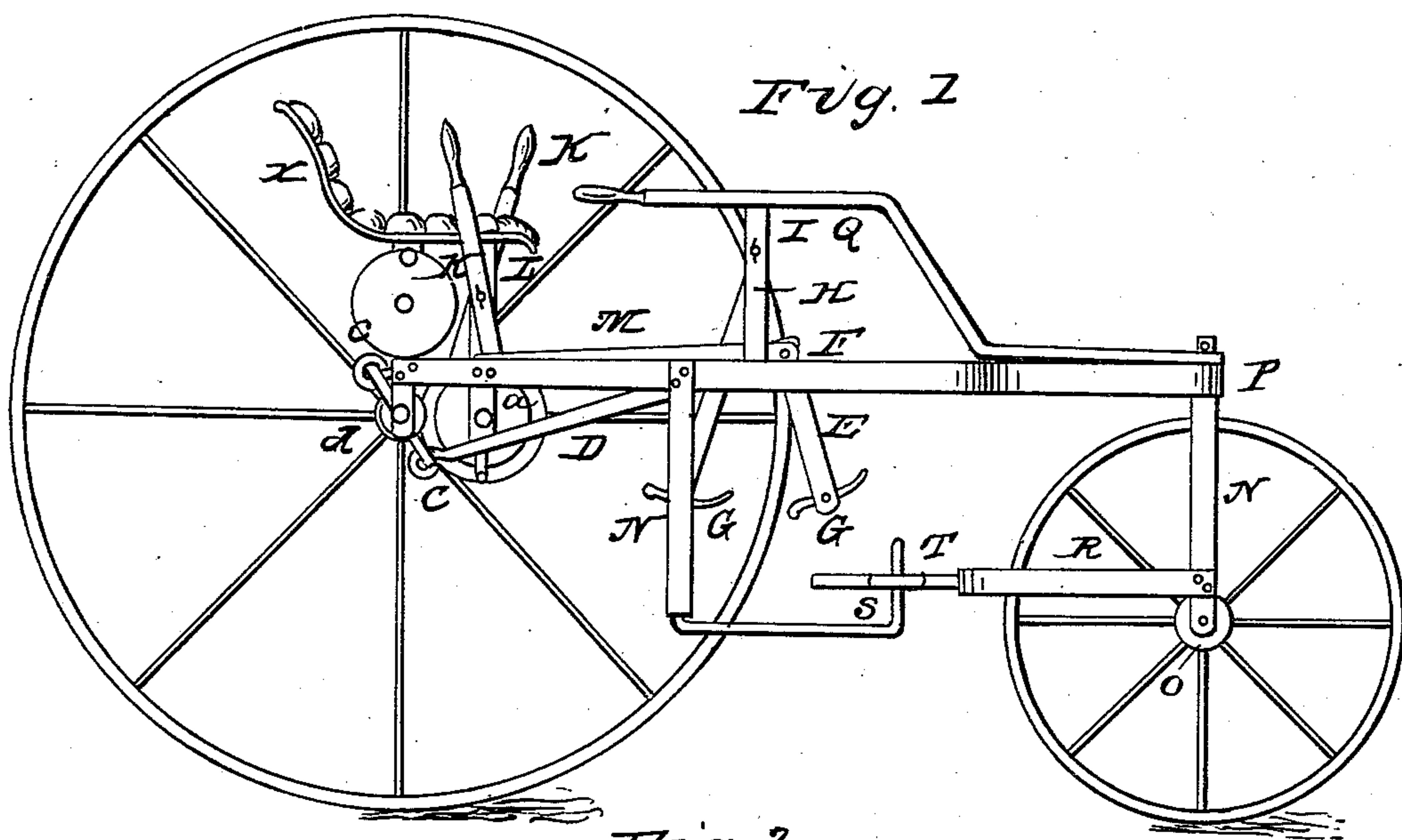


S. H. JENNINGS.

Velocipede.

No. 94,215.

Patented Aug. 31, 1869.



Inventor

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S. H. JENNINGS, OF DEEP RIVER, CONNECTICUT.

Letters Patent No. 94,215, dated August 31, 1869.

IMPROVED VELOCIPED.

The Schedule referred to in these Letters Patent and making part of the same.

Be it known that I, S. H. JENNINGS, of Deep River, in the county of Middlesex, and State of Connecticut, have invented a new and useful Improvement in Velocipedes, and that the following description, taken in connection with the accompanying plate of drawings, hereinafter referred to, forms a full and exact specification of the same, wherein I have set forth the nature and principles of my said improvement, by which my invention may be distinguished from others of a similar class, together with such parts as I claim, and desire to secure by Letters Patent.

My invention relates to that class of velocipedes in which more than two wheels are employed; and consists in certain modifications in the details of the same, by which the device is rendered capable of being operated by the hands and guided by the feet, or operated by the feet and guided by the hands, or operated by the feet and one hand, and guided by the other, or operated by both feet and both hands; and in the use of gearing, so constructed and arranged that with the same motion of the feet and hands it may be run at three different rates of speed; and in the appliance of a balance-wheel, combined and arranged with the axle of the driving-wheels.

In the accompanying plate of drawings, which illustrate my invention, and form a part of the specification thereof—

Figure 1 is a side elevation of the machine, partially in section.

Figure 2 is a back view of the same.

The axle A is connected with the driving-wheel B in the ordinary manner, and is so bent as to form the double cranks C.

The said cranks are connected with the motive-power by means of the connecting-rods D, which are pivoted to the foot-levers E by the bolt F.

The said foot-levers are provided with pedals or adjustable foot-rests, G, which turn upon rods secured to the lower ends of the said levers.

The upper ends of the said foot-levers are hinged or jointed to the cylindrical rod, from which they are pendent, and which is keyed to the cross-brace H, at I.

The hand-levers K are pivoted to the cross-brace L of the frame, and are connected with foot-levers E by means of the rods M.

The guiding-apparatus is composed of the clevises N and R, handle Q, foot-guide V, attached to the angle-bar S. Circular slots cut in the lower ends of the prongs of the clevis N constitute bearings for the wheel.

The said clevis N is pivoted and keyed to the frame at the point P, and is operated by means of the handle Q, within easy reach of the operator.

A second clevis, R, the prongs of which are bolted to the clevis, and whose position is at right angles to the clevis N, is operated by the angle-bar S, which

works in an oblong slot cut in the clevis at T, and the rear end of which passes through circular slots cut in the bars U of the frame, and is keyed to the foot-guide V.

Balance-wheels W are secured to the ends of the cylindrical shaft X, which has its bearings in slots cut in the cross-bar Y. The said angular cross-bar Y also forms a support for the seat.

The cylindrical shaft X is connected by a spur or frictional gearings, with the axle A, by means of which motion is imparted to the same.

In order to impart different rates of motion to the driving-wheel, toothed wheels a are secured to the end of a shaft, which has its bearings in slots cut in the angular cross-bar L, at b.

The said shaft is bent to form a crank, c, to which motion may be imparted by a connecting-rod, used in lieu of the rod D.

The said wheels gear into corresponding wheels upon the shaft A, at d. The said wheels at d are so arranged that either one of them may be keyed fast to the axle, while the others remain loose and movable upon the same.

Having thus described the component parts and construction of my invention, I will proceed to explain its operation.

The motive-power, applied by the hands to the hand-levers K, or by the feet to the foot-lever E, imparts alternating traverse motion to the connecting-rod D, which is imparted to the driving-wheels by the axle A. The action of the feet in thus imparting motion is perfectly natural, as they describe about the same arc of a circle as in walking, and the adjustable foot-rests G add much to the comfort of the operator.

The motion of the hands is also perfectly natural, and in such a direction as to give the most power with the least fatigue.

The machine may be guided either by the hands, by means of the handle Q, or with the feet, by means of the foot-guide V. Or the handle Q may be locked or secured in any convenient manner to the cross-bar H, in such a manner as to give either a direct or curvilinear direction to the machine, while the same is propelled by both hands and feet.

In the adaptation of the balance-wheel to the velocipede, the same advantages are gained which have been experienced in its application to other machines impelled by rotary motion.

By the use of the combination gearing, three different rates of speed are obtained by the same motion of the feet and hands on the levers; that is to say, the gearing may be so arranged that one action of the levers produces one revolution of the driving-wheels, or one action of the levers produces two revolutions of the driving-wheel, or one action of the levers pro-

duces one-half a revolution of the driving-wheel. By these appliances, to wit, the wheel at *d*, upon the axle A, and the wheels at *a*, which gear into the same, the machine is rendered adaptable to the circumstances of the case or condition of the roads; for instance, in ascending an inclined plane, when power and not speed is required, the smallest wheel at *a* is caused to gear with the largest upon the axle A, at *d*. On the other hand, when great speed is required, the largest wheel, actuated by the crank C, at *a*, is geared into the smallest wheel upon the axle A, at *d*.

Having thus described the construction and operation of my invention, I will proceed to indicate in the following clauses what I claim, and desire to secure by Letters Patent, to wit—

1. The devices herein described for guiding the vehicle, when arranged and operated as set forth consisting

of the clevis N, with its handle Q, the clevis R, with its stotted arm T, and the foot-guide V, attached to the elbow-arm S.

2. The foot-lever E, with the foot-rests G pivoted thereto, in combination with the connecting-rod D, and crank C, when arranged and operated substantially as described.

3. The arrangement of the hand-levers K, connecting-rods M, foot-levers E, connecting-rod D, and crank C, when operated as herein substantially described.

4. The balance-wheels W, with their axle X, combined and arranged with the axle A, connected together by gearing, substantially as herein described.

S. H. JENNINGS.

Witnesses:

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