(No Model.)

A. G. ROSE.

BICYCLE.

No. 399,285. Patented Mar. 12, 1889.

Fig. 1

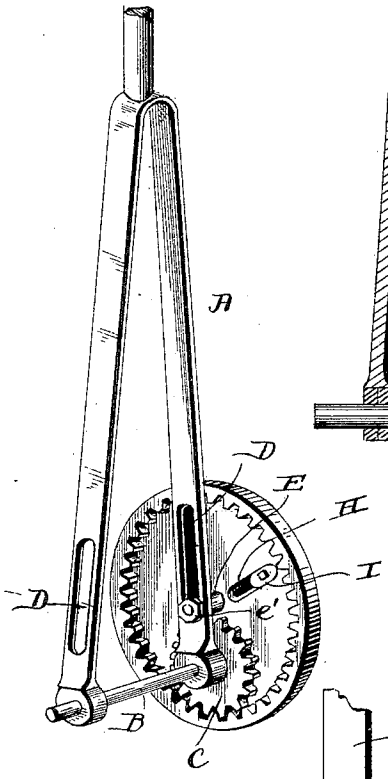


Fig. 2.

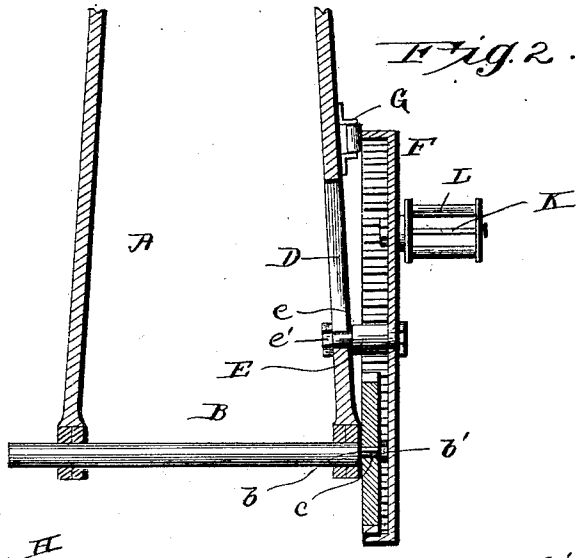


Fig. 3.

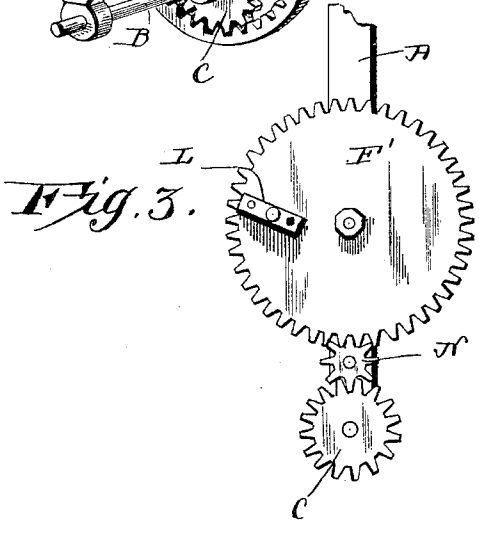
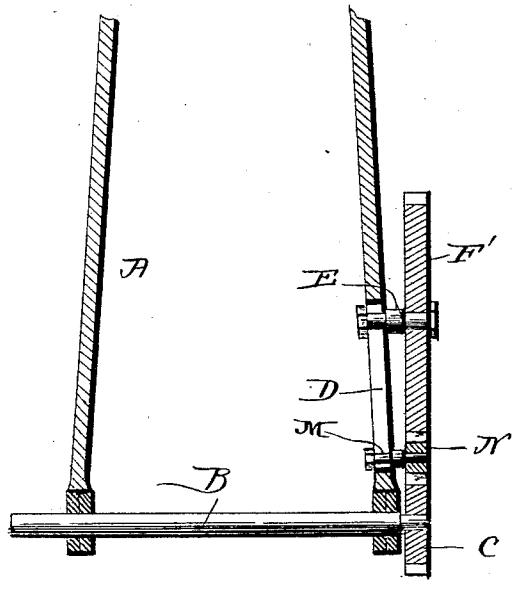


Fig. 4.



Witnesses,
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O. E. Doyle.

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UNITED STATES PATENT OFFICE.

AARON GILBERT ROSE, OF GREENCASTLE, INDIANA.

BICYCLE.

SPECIFICATION forming part of Letters Patent No. 399,285, dated March 12, 1889.

Application filed December 1, 1888. Serial No. 292,424. (No model.)

To all whom it may concern:

Be it known that I, AARON GILBERT ROSE, a citizen of the United States, residing at Greencastle, in the county of Putnam and State of Indiana, have invented a new and useful Improvement in Bicycles, of which the following is a specification.

The invention relates to improvements in bicycles, having special relation to the gearing for the driving-wheel; and it consists in a certain novel construction and combination of devices, fully described hereinafter in connection with the accompanying drawings, and specifically pointed out in the appended claim.

In the drawings, Figure 1 is a perspective view of the fork of a bicycle, showing the improved gearing applied in the operative position thereto. Fig. 2 is a vertical central sectional view of the same. Fig. 3 is a side view showing a slightly-modified form of the gearing. Fig. 4 is a vertical central sectional view of the same.

Referring by letter to the drawings, A represents the fork, B the axle having bearings thereon, and C a pinion removably secured to the end of the axle outside the fork. This pinion is provided with a square central opening, *c*, fitting on the squared end of the axle, bearing against a shoulder, *b*, thereon, and held in place by a nut, *b'*.

The fork is provided above the axle with a vertical slot, D, in which is adjustably mounted the inner end of a stub-axle, E, the said axle being provided with a shoulder, *e*, bearing against the other side of the fork and having its inner end engaged by a nut, *e'*.

The internal gear-wheel or power-wheel, F, is mounted on the outer end of the stub-axle and meshes with the pinion on the axle at its lower side. An anti-friction roller, G, is journaled on the outer side of the fork at a point above the axle, so that the inner face of the wheel F, adjacent to its edge, bears against the said roller and prevents undue friction. This roller also guides the wheel in a true vertical plane and prevents transverse strains on the stub-axle. A radial slot, H, is formed in the internal gear-wheel, and adjustably secured therein is the block I, from which projects the pedal-axle K, carrying the pedal L, said pedal being adjusted toward or from the center of the gear-wheel to increase or reduce the throw of the same by moving the block in the slot.

By the use of the improvement increased speed is attained with but a minimum expenditure of power and with but few revolutions of the large wheels to those of the pinion on the axle; but different-sized pinions may be attached to the axle to increase or lessen the comparative sizes of the meshing wheels. Obviously when the pinion is replaced by a larger or a smaller pinion the internal gear-wheel must be adjusted up or down, (by moving the stub-axle,) in order to cause the wheels to mesh.

In the modification I use an externally-toothed power-wheel, F', instead of the internally-toothed wheel F shown in the other form of the device, and mount it on a stub-axle, E, which projects from a block arranged in a slot in the fork.

A similar stub-axle, M, is arranged in the lower end of the slot in the fork, on which is mounted the spur-wheel N, which meshes at its opposite sides with the power-wheel and the pinion on the axle. It will be seen that in this case the rotary motion of the power-wheel is conveyed to the pinion on the axle through the intermediate spur-wheel. Different-sized pinions may be applied to the axle as in the first form, the spur-wheel and power-wheel being adjusted vertically to suit the same.

It will be seen that I have described the improved gearing as applied to one end of the axle only; but it will be understood that the said gearing will be duplicated on the other end thereof.

My improvements are simple in their construction, may be manufactured and supplied at a slight cost, are effective in their operation, and may be applied to bicycles now in use with but slight changes.

I do not desire to claim the use of gearing to convey the pedal-power to the driving-wheel of a bicycle, as I am aware that various devices of this character are in use; nor do I desire to claim the combination of an internally-toothed power-wheel meshing with a pinion on the axle, as this, also, is a common construction.

The means which I have provided, whereby the relative sizes of the meshing wheels may

be changed at will to suit the rider, and thereby enable him to change the relative number of revolutions of the pedal and driving-wheel, are simple and effective; and I do not desire to limit myself to the exact construction shown and described, but reserve to myself the right to make all such slight changes and alterations in the details of construction as may properly fall within the scope of my invention.

Having thus described the invention, I claim—

The combination, with the fork provided with a vertical slot, D, and the main axle provided with a removable pinion outside the fork, of the stub-axle E, fitting in the slot D and vertically adjustable therein, the stub-axle M, arranged in the said slot and vertically adjustable therein, the power gear-wheel mounted on the stub-axle E and carrying the pedal, and the intermediate spur-wheel mounted on the stub-axle M and meshing with the power-wheel and the pinion, all substantially as and for the purpose specified.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in presence of two witnesses.

AARON GILBERT ROSE.

Witnesses:

ERNEST S. MOORE,

FRED WILHITE.