(No Model.)

H. BAINES.

TRICYCLE.

No. 334,839. Patented Jan. 26, 1886.

Fig. 3.

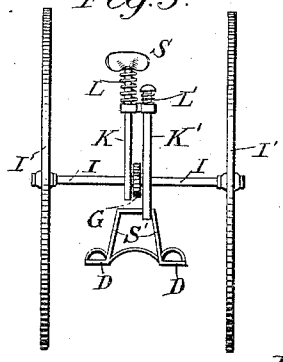


Fig. 1.

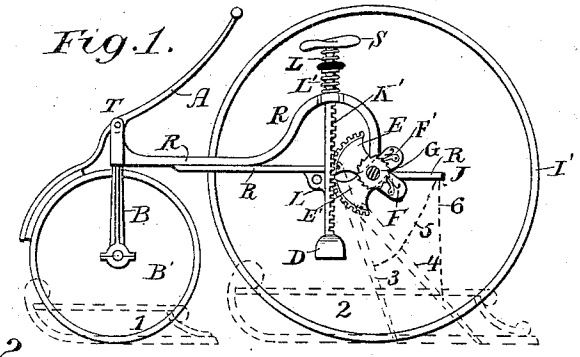


Fig. 2.

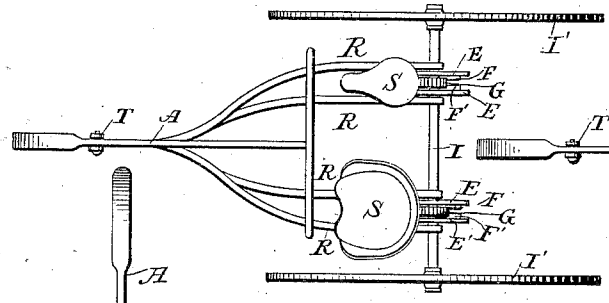


Fig. 5.

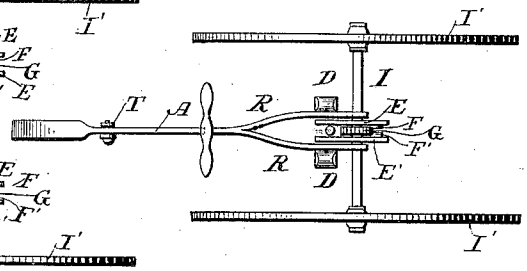


Fig. 8.

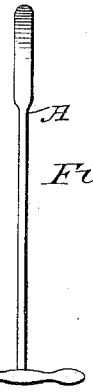


Fig. 6.

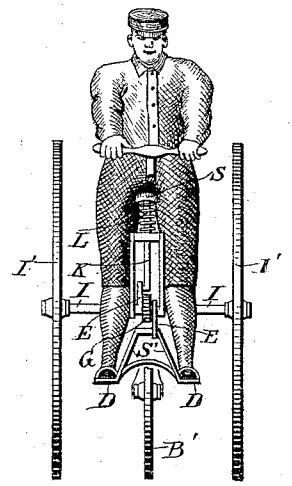


Fig. 4.

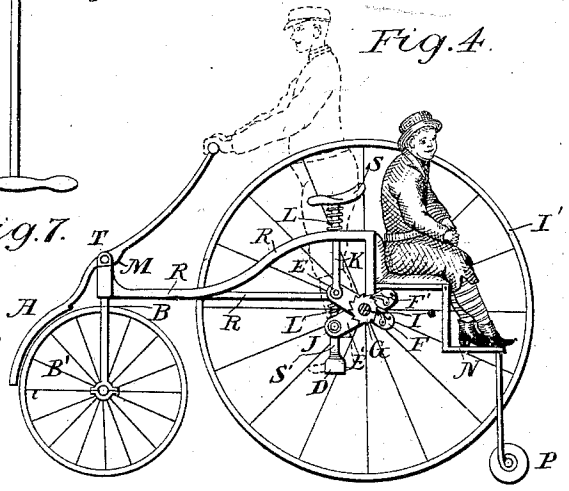
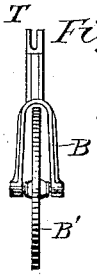


Fig. 7.



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UNITED STATES PATENT OFFICE.

HUGH BAINES, OF TORONTO, ONTARIO, CANADA.

TRICYCLE.

SPECIFICATION forming part of Letters Patent No. 334,839, dated January 26, 1886.

Application filed March 3, 1885. Serial No. 157,608. (No model.)

To all whom it may concern:

Be it known that I, HUGH BAINES, of the city of Toronto, in the county of York, Dominion of Canada, have invented certain new and useful Improvements in Tricycles; and I hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it pertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form part of this specification.

Figure 1 is a side elevation of my single or double tricycle, showing my driving-gear, pawls, and ratchet-wheel, springs, saddle, foot-rest, combined steering and brake rod, also, on dotted lines, my attachment for sleighing in winter. Fig. 2 is a plan of my double tricycle with a gentleman's saddle on one side and a lady's saddle or seat on the other side. Fig. 3 is a front elevation of my single tricycle, showing driving-gear, saddle, and feet-rest, which I duplicate in my double tricycle, as shown at Fig. 2. Fig. 4 is a sectional side elevation of my tricycle, showing levers in place of quadrants on driving-axle, combined brake-rod and steering-gear, with operator in position for starting, and with extra folding step-seat at back, which forms a box when closed. Fig. 5 is a plan view of the same, showing feet-rest, operating and steering gear. Fig. 6 is a front elevation of one of my single tricycles, with operator in position, showing feet-rest and driving-gear. I also use the same feet-rest in my tricycle shown in Fig. 2. Fig. 7 is a detail of steering-gear, showing the attachment of main frame to steering-wheel frame, also the eye for carrying the combined brake and steering rod. Fig. 8 is a plan view of the combined brake and steering rod.

My invention relates to a novel tricycle on which a single person may ride or two persons may ride side by side, and by raising and lowering their bodies or their legs may and will cause the tricycle to move without their interfering with the movements of each other. This I do by means of my driving-gear and connections hereinafter more fully described.

In a tricycle for one person to operate I place only one frame and one saddle upon the axle, as shown at Fig. 5; but in a tricycle for two to operate I place two frames and two seats or saddles upon the axle, suitable for either ladies or gentlemen, as shown at Fig. 2. I derive great leverage power by making the hind axle the fulcrum for my gear-segments, pawl, and ratchet, which are worked by two vertical racks, (see Fig. 1,) one attached to the saddle the other to the feet-rest, upon which I throw the whole weight of my body in the saddle or in the feet-rest, which is made adjustable to suit riders by means of set-screw or otherwise. By this construction I may keep at rest the feet and raise and lower the body, or vice versa; or by working the feet and body alternately I drive the tricycle faster. At Fig. 1 I show how I accomplish the same by quadrants, and not by levers, as in Fig. 4. I make a revolution of the tricycle-wheels by the vertical action of the racks upon the quadrants or levers, which operate upon the axle by means of the ratchet-wheel and pawl, and not, as heretofore, by cranks or chain-wheels or gear.

My invention further relates to a folding step-seat designed to carry passengers, which when folded up forms a box for carrying goods.

It further relates to propelling-levers, with supporting-chains working in connection with runners for sleighing in winter, as shown in dotted lines in Fig. 1; and it further relates to a combined steering and brake rod, as shown in Figs. 1, 4, 7, and 8.

S is a seat secured to a vertically-sliding rod or bar, K, guided by and supported in a frame, R. Between the top of the frame and the seat is a spring, L, which forces the seat upward, while permitting the latter to be depressed by the weight of the operator. The frame is supported at its rear end on an axle, I, sustained by wheels I', and at its forward end by the steering-wheel B' and its frame B.

Secured to the axle I is a ratchet-wheel, G, engaged by pawl F on a lever, E, mounted loosely on the axle and operated by the seat-rod, to which it is connected. At one side of the seat-rod is another rod or bar, K', also sliding in and guided by the frame R. This

rod or bar is provided at its lower end with a frame, S′, having stirrups D, and is supported by a spring, L′, on the main frame. A lever, E′, having pawl F′ engaging the ratchet-wheel and mounted loosely on the axle, is connected with the stirrup-rod, and is operated thereby. This construction permits the operator to use either the seat or stirrup-frame, or both, alternately, for the purpose of propulsion.

In Fig. 1 the rods K and K′ take the form of rack-bars, whose teeth engage or mesh with teeth on the segments of the levers E E′; but in Fig. 4 the levers are merely pivoted to plain rods.

A is a combined steering and brake rod, hinged to the eye T of the steering-wheel frame, and having a shoulder, M, bearing on said frame.

N is a hinged step-seat secured to the axle at the rear of the operator's seat.

To operate the machine, I first, by means of raising one end of brake-rod A, Fig. 4, prevent wheel B′ from turning. I then step into the saddle S and feet-rest or stirrups D, and when ready to start I relieve brake-rod A and allow the rod to rest upon shoulder M, against the eye T. I then throw the weight of the body upon saddle S, which, being attached to rod K and lever E, causes the lever E to descend and its other end to ascend. To this end is attached pawl F, which, falling into the tooth of ratchet-wheel G, said ratchet-wheel being fast to the axle I, causes the main wheels I of the tricycle, with its axle and wheels, to move forward, carrying with them the whole machine and operator. The body having descended, the feet are then lifted partially by the spring L′ and partly by muscular power. I then force the feet downward, which drives down lever E′. The pawl F′, attached to its other end, enters the tooth of ratchet-wheel G, and adds fresh impetus to the main wheels. Simultaneously with this motion I raise the body, which frees spring L, which lifts saddle S into position for a fresh stroke. As the pawls F and F′ slip over the teeth of the ratchet in the forward motion of the tricycle, it will be obvious that either the feet or the body may remain at rest, at the will of the operator, as either the feet or the body alone are sufficient to propel the machine.

At Fig. 1 I show quadrants, (in place of levers,) racks and guides, pawls, ratchet-springs, saddle, feet-rest, brake, and steering-rod, which are operated precisely in the same manner as the gear in Fig. 4.

In order to make the machine useful in winter, I place runners under the wheels 1 2, Fig. 1. (Shown in dotted lines.) To the ends of the levers E E′, I connect propelling-levers 3 4, held in position by chains 5 6, attached to framing at J. The other ends of the propelling-levers 3 4 are allowed to touch the ground. The levers E E′ are operated by racks K K. These racks receive their force from the body and legs of the operator as before described in driving the tricycle-wheels in Fig. 4; but in place of driving the wheels, the levers are made by the action described to work the levers 3 4, which in the downward stroke strike the ground alternately, and thus propel the sleigh. I also use the propelling-levers 3 4 on the tricycle in summer when ascending steep hills.

Having now described my invention and the mode of operating the same, I do not bind myself to build my tricycles to any particular size or shape. I may vary in size and shape and position of parts used. Nor do I bind myself to place my ratchet in the position shown, as I may make my frame wider and place my ratchet upon the hub of the wheel or on some other convenient part of the axle, and I make my tricycle of any suitable materials now in common use.

I am aware that there are in present use tricycles propelled by means of the body and legs acting upon cranks, chain-wheels, and chains by means of various gearings not described in my specification or shown. Such methods I do not claim; but

What I do claim as new, and desire to secure by Letters Patent, is—

1. The combination, with the main frame, an axle provided with a ratchet-wheel, and a lever having a pawl engaging the ratchet-wheel, of the vertically-sliding rod or bar connected to the lever, a seat secured to said rod or bar, and a spring by which said seat, rod, or bar is lifted and supported on the main frame, substantially as set forth.

2. The combination, with an axle having a ratchet-wheel and levers having pawls engaging the ratchet-wheel, of the vertically-sliding rods or bars supported by springs on the main frame and connected to their respective levers, one of the rods or bars being provided with a seat and the other being provided with a stirrup-frame, substantially as set forth.

3. The combination, with the main frame and axle, of the folding step-seat, substantially as set forth.

4. The combination, with the main frame and axle, of the folding step-seat and a wheel attached to the step-seat, substantially as set forth.

5. The combination, with the levers having pawls and an axle having a ratchet-wheel, of the propelling-levers 3 and 4, secured to the pawl-levers, and devices by which the pawl-levers are operated, substantially as set forth.

6. The combination, with the main frame, axle having ratchet-wheel, axle-support, and levers having pawls, of the propelling-levers and runners, substantially as set forth.

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Witnesses:
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P. B. MATTHEWS.