

(No Model.)

J. H. DEARLOVE & H. THRESHER.

TRICYCLE.

No. 381,763.

Patented Apr. 24, 1888.

FIG. 1.

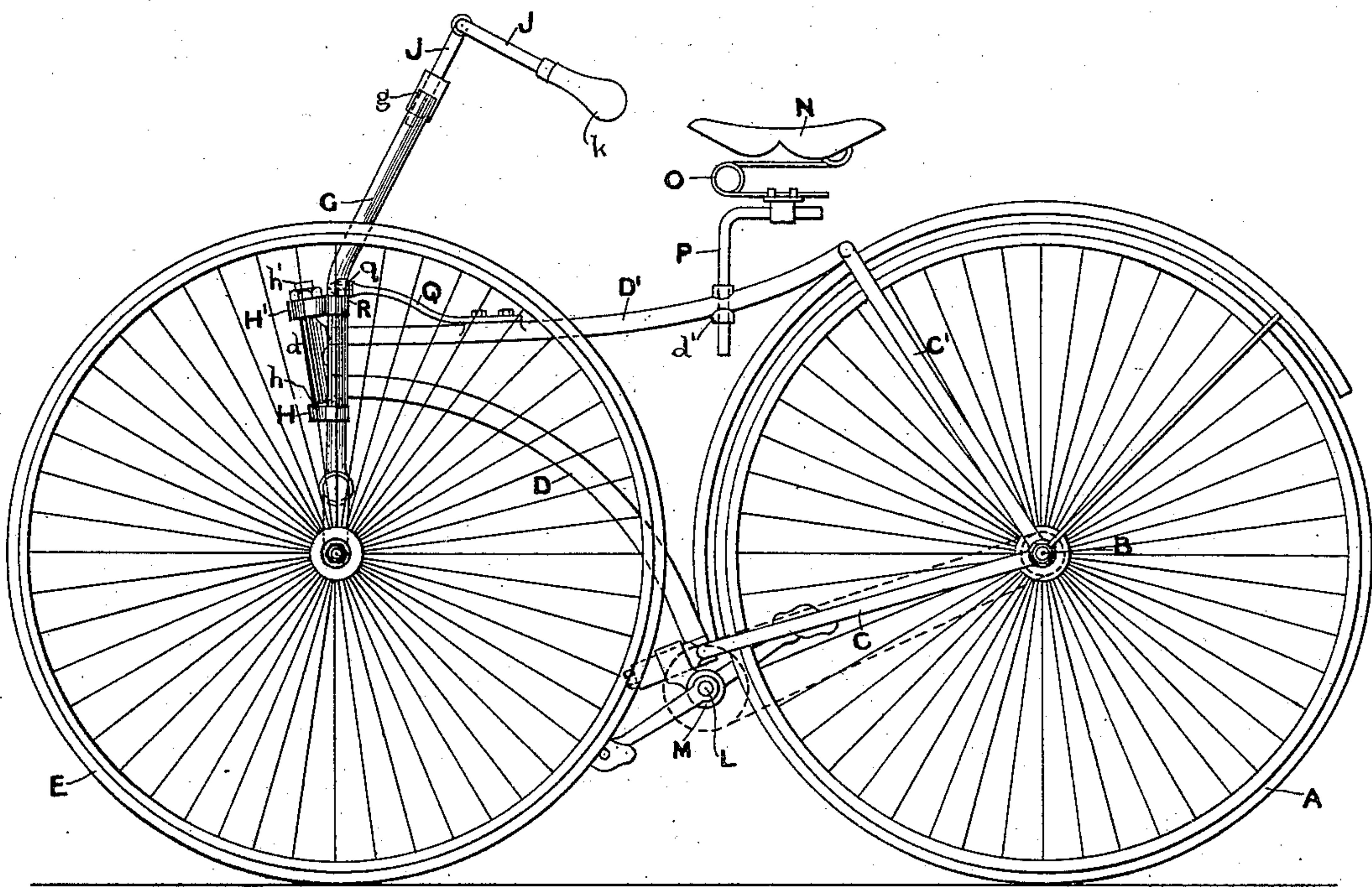
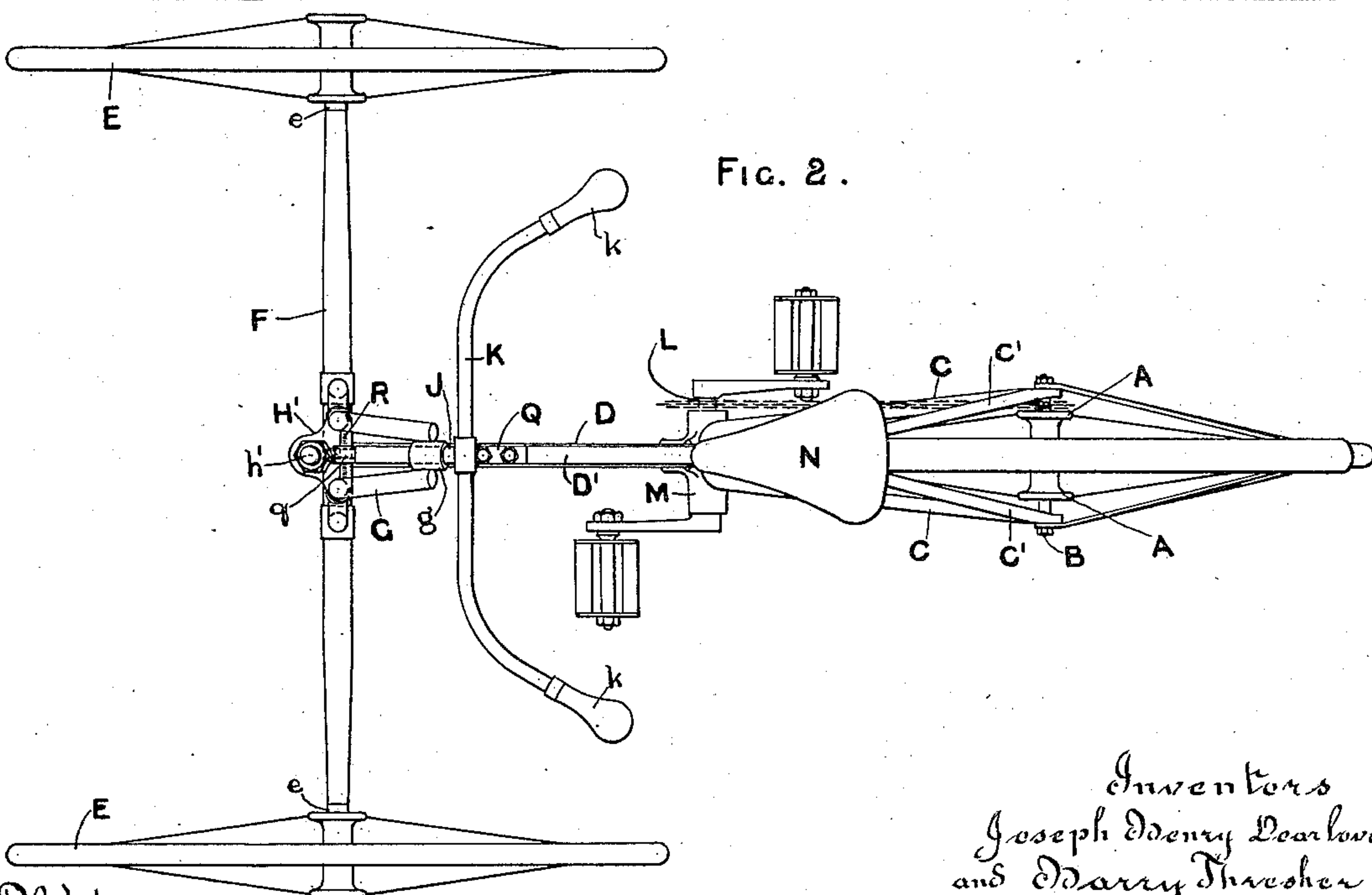


FIG. 2.



Witnesses.  
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# UNITED STATES PATENT OFFICE.

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## TRICYCLE.

SPECIFICATION forming part of Letters Patent No. 381,763, dated April 24, 1888.

Application filed May 17, 1887. Serial No. 238,466. (No model.) Patented in England February 11, 1886, No. 1,997.

*To all whom it may concern:*

Be it known that we, JOSEPH HENRY DEARLOVE and HARRY THRESHER, both subjects of the Queen of Great Britain, residing in London, in the county of Middlesex, England, have invented certain new and useful Improvements in Tricycles, (for which we have received Letters Patent in Great Britain, No. 1,997, dated February 11, 1886,) of which the following is a full and complete specification.

Our invention relates to that type of tricycle having one driving and two steering wheels, the former of which is placed centrally in the rear of the latter. We are aware that tricycles of this type have already been made, and therefore our invention does not relate to this particular arrangement of the wheels, but to an improved form of framework and arrangement of parts whereby we obtain a machine which is simple of construction, easy of propulsion, and has great safety, the lack of which has hitherto been one of the inherent defects of this type of machine. Hitherto in machines of this type the rider is seated immediately in front of the driving-wheel and the steering-wheels are kept as near to the driving-wheel as possible. This arrangement is a faulty one, inasmuch as sufficient weight is not carried by the driving-wheel.

In our improved machine we use very small wheels, preferably all the same size—viz., about thirty inches in diameter. We place the seat for the rider as nearly over the center of the driving-wheel as the position of the pedal crank-axle in front of the driving-wheel will allow, and we extend the wheel-base as far as it is convenient to do so. By placing the weight of the rider as nearly as possible over the center of the driving-wheel we at all times get sufficient weight on the driving-wheel to insure driving-contact, and to insure stability when running on curves we place the steering-head at an angle with the horizontal plane, raking forward from the bottom center, so that as the steering-wheels are turned for the purpose of guiding the machine the driving-wheel cants or leans over toward the center of the curve in which the machine is running.

In the accompanying drawings, Figure 1 is

a side elevation, and Fig. 2 is a plan, of our improved tricycle.

Throughout the several views similar parts are marked with like letters of reference.

We mount the driving-wheel A on a stud-axle, B, carried by a frame consisting of a horizontal fork, C, a backbone, D, connected to the shank thereof and running forward and terminating in a neck pin, *d*, a light backbone, D', to carry the seat, supported at its rear by a light fork, C', embracing the driving-wheel A and fixed to the neck-spindle *d* at its forward end. The steering-wheels E E are mounted on stud-axles *e e*, carried by a frame consisting of a rigid cross-axle, F, and an upright fork, G, braced together by two cross-bars, H and H', in which are formed the centers forming the steering-head or joint to receive the neck-spindle *d*. The bottom center, *h*, is the usual coned cup, and the top center, *h'*, is the usual coned set-screw. These centers are so arranged that the axial line of the head is not vertical or raked backward, as is sometimes done; but it is raked forward from the lower center, *h*, the neck-spindle *d* being fixed to the backbones D and D', to correspond with the inclinations of the head-centers. In the top of the forked frame G is formed a socket, *g*, to receive an adjustable pillar, J, carrying the transverse handle-bar K, which is curved to bring the handles *k k* into a convenient position for the rider. A pedal crank-axle, L, is mounted in a suitable bracket, M, carried by the backbone D, immediately in front of the driving-wheel, and is connected thereto by a chain running over chain-wheels in the usual manner. The seat N for the rider is mounted on a suitable spring, O, carried by an adjustable pillar, P, fitting in a socket, *d'*, on the backbone D'.

In order to keep the steering-wheels central, so that the machine will always run in a straight line unless operated upon by the rider for the purpose of deviating its course, we use a device for controlling the frame carrying the steering-wheels and for giving it a "fly-to-center" action, constructed as follows: On the backbone D' we fix a flat spring, Q, elastic in the vertical plane and carrying at its free end



a roller, *q*, or its equivalent, which engages with a heart-shaped cam, *R*, formed on or fixed to the cross-bar *H'*, the depression of the cam being exactly on the center line of the machine.

We are aware that tricycles have already been constructed with two steering-wheels placed in front of one central driving-wheel; and we are also aware that the steering-heads of tricycles have been raked rearward from the bottom centers for the purpose of causing the steering-wheels to cant or lean over when running on curves; and we are further aware that steering-controllers of various forms have been used for the purpose of automatically keeping the machine running in a straight line, and we therefore do not claim such devices or arrangements broadly; but

What we do claim, and desire to secure by Letters Patent, is—

1. A tricycle having a steering-head composed of a pin carried by the frame of the vehicle and raking forward from its lower end, and two centers for such head carried by the steering-fork, the upper center being located in advance of the lower center, substantially as set forth.

2. A tricycle having a steering-fork bent back at its upper end and supporting a transverse handle-bar, and a steering-head carried by such fork and raking forward from its bottom center, substantially as set forth.

3. A tricycle having a steering-fork, two cross-pieces bracing such fork and respectively provided with spindle or pin centers located forward of the fork with the upper center in advance of the lower center, and a spindle carried by the frame of the vehicle and raking forward from its lower end and working in such centers, substantially as set forth.

4. A tricycle having an upper backbone carrying the driver's seat and a lower backbone carrying the driving-cranks, a spindle secured to the forward ends of such backbones, two forks carried by the driven axle and connected with the rear ends of the said backbones, and a steering-head carrying a handle-bar and provided with two centers, respectively, receiving the upper and lower ends of the spindle aforesaid, substantially as set forth.

5. A tricycle having two parallel steering-wheels located opposite each other, a driving-wheel located centrally behind them, an axle carrying the steering-wheels, an upright fork

secured to such axle and provided with a transverse handle-bar and two centers, and a spindle connected with the frame of the vehicle and entered at its upper and lower ends into such centers, substantially as set forth.

6. A tricycle having two parallel steering-wheels located opposite each other, a driving-wheel located centrally behind them, a rigid cross-axle, stud-axes located at the ends thereof and carrying the steering-wheels, an upright fork carried by such cross-axle, a handle-bar located at the upper end of the fork, a steering-head carried by such fork and raking forward from its lower center, two backbones connected with the head, two forks carried by the driving-axle and respectively connected with such backbones, a seat carried by the upper backbone, and driving-cranks carried by the lower backbone, substantially as set forth.

7. A tricycle having two parallel steering-wheels located opposite each other, a driving-wheel located centrally behind them, an upright forked frame connected with the steering-wheels and stayed by two cross-pieces forming a head for the neck-spindle of the frame carrying the driving-wheel, and a handle-bar carried by such forked frame, substantially as set forth.

8. A tricycle having a heart-shaped cam with its depression in the center line of the machine, and a spring movable in the vertical plane and entering the depression in the cam, the cam being fixed to one part of the vehicle and the spring to the other part thereof, substantially as set forth.

9. A tricycle having two parallel steering-wheels located opposite each other, a driving-wheel located centrally behind them, a steering-head raked forward from its bottom center and located in line with the driving-wheel, two backbones connected at their forward ends with the neck-pin and at their rear ends with the forks attached to the axle of the driving-wheel, and a transverse handle-bar directly connected with the steering-head, substantially as set forth.

In witness whereof we have hereunto signed our names in the presence of two subscribing witnesses.

JOSEPH HENRY DEARLOVE.  
HARRY THRESHER.

Witnesses:

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