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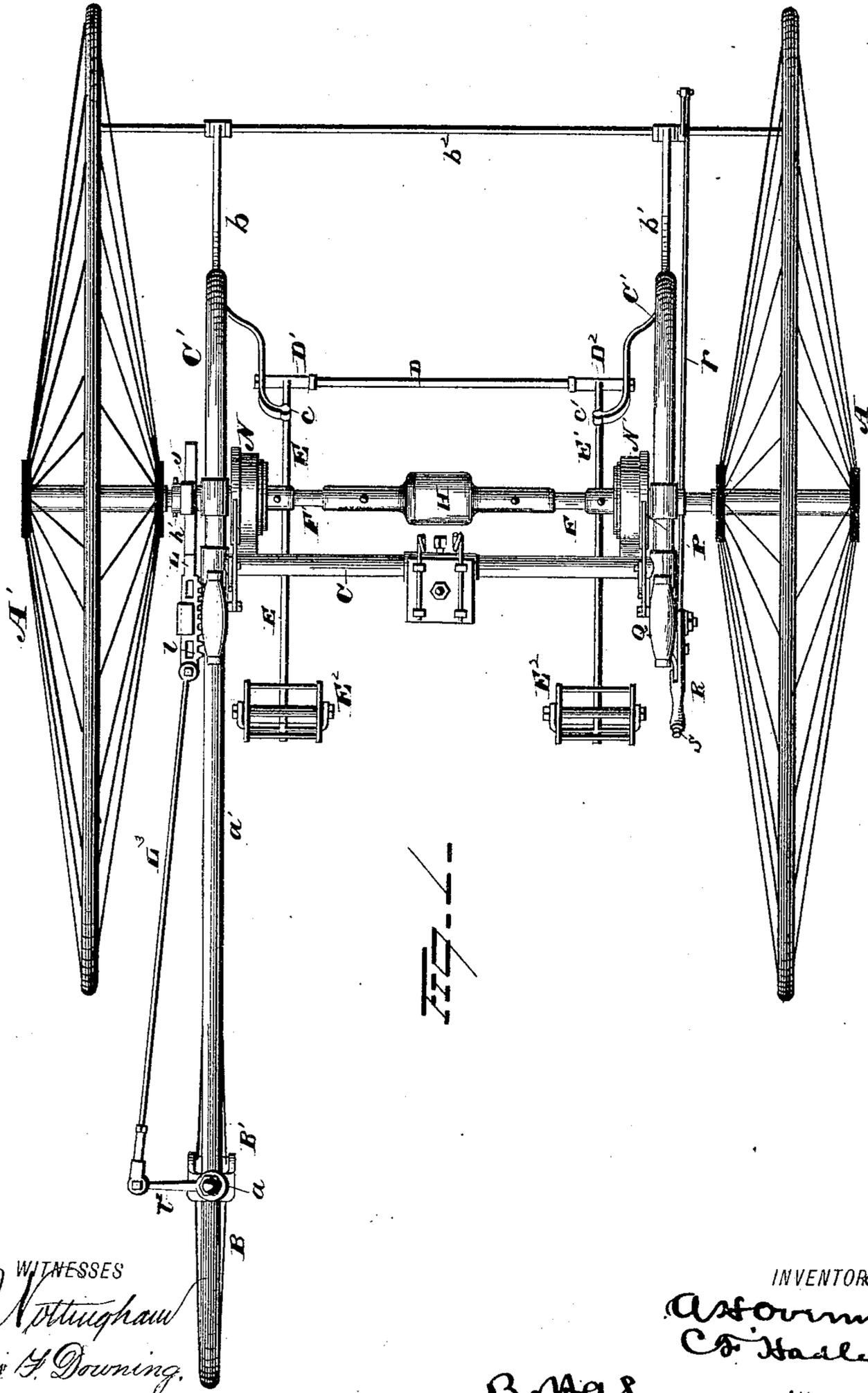
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A. H. OVERMAN & C. F. HADLEY.

TRICYCLE.

No. 270,691.

Patented Jan. 16, 1883.



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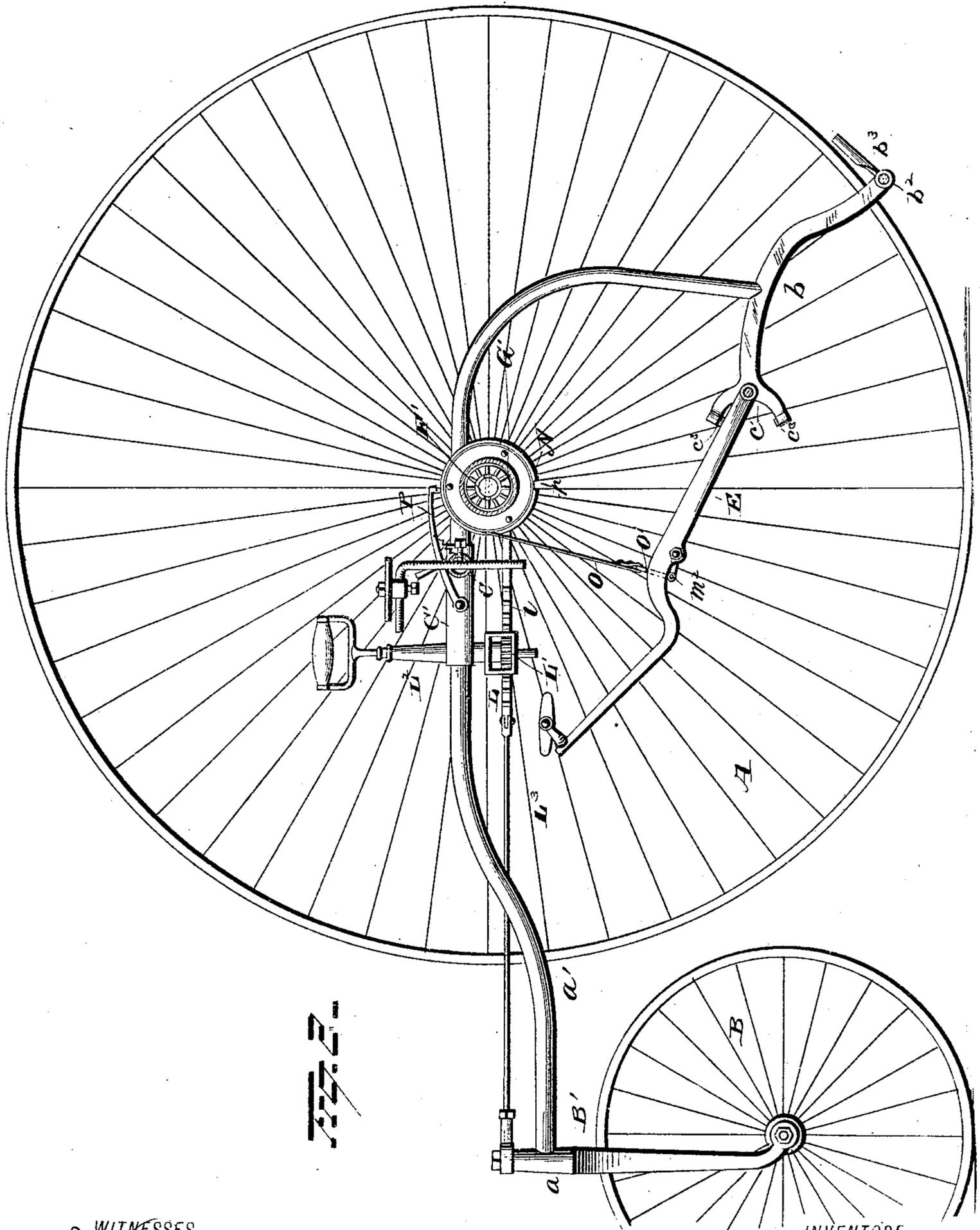
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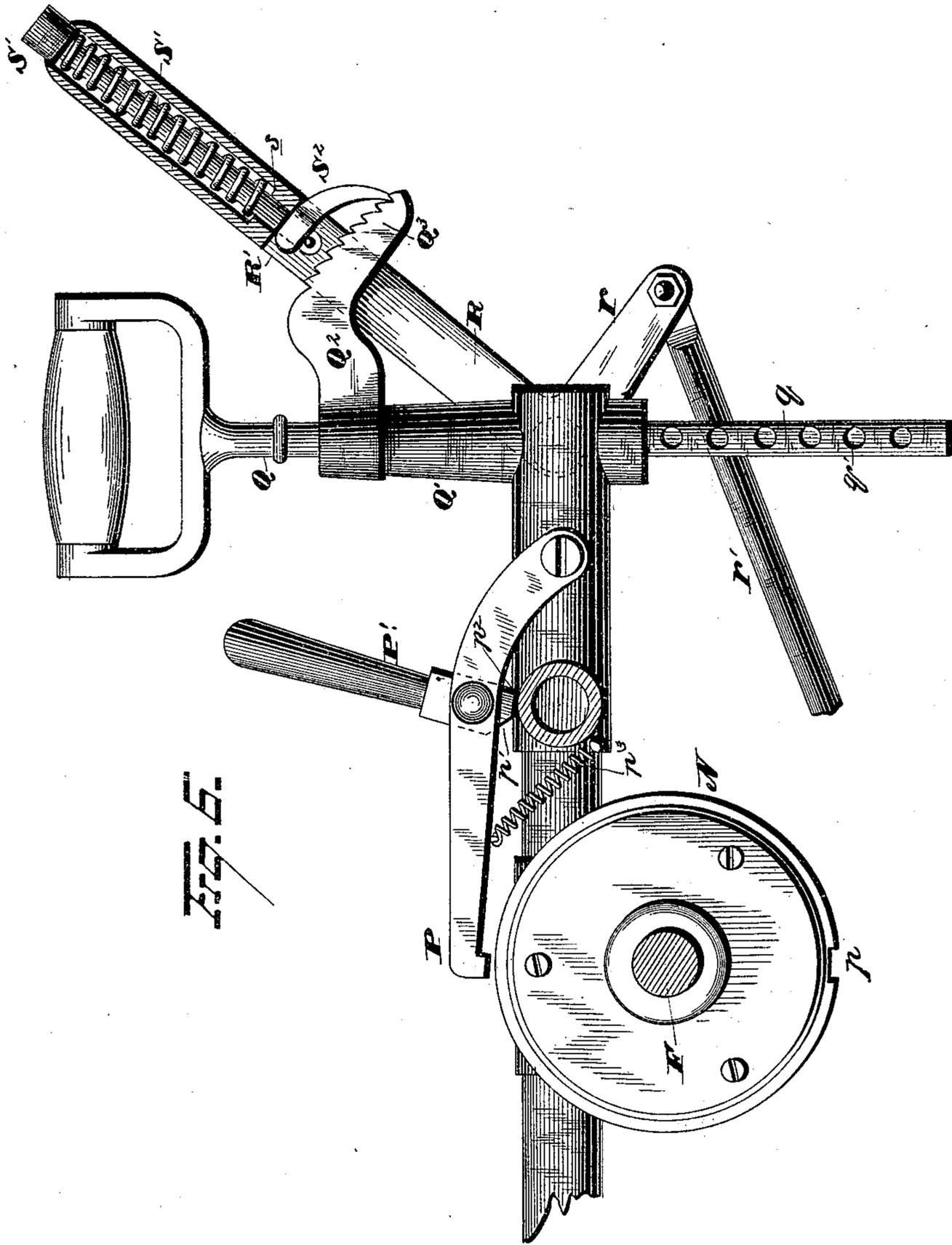
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# UNITED STATES PATENT OFFICE.

ALBERT H. OVERMAN, OF HARTFORD, CONNECTICUT, AND CHARLES F. HADLEY, OF CHICOPEE, MASSACHUSETTS.

## TRICYCLE.

SPECIFICATION forming part of Letters Patent No. 270,691, dated January 16, 1883.

Application filed December 7, 1882. (No model.)

To all whom it may concern:

Be it known that we, ALBERT H. OVERMAN, of Hartford, in the county of Hartford and State of Connecticut, and CHARLES F. HADLEY, of Chicopee, in the county of Hampden and State of Massachusetts, have invented certain new and useful Improvements in Tricycles; and we do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it pertains to make and use the same.

Our invention relates to an improvement in tricycles, the object being to provide improved means for guiding the vehicle, for disconnecting the axles of the main driving-wheels in turning corners, for locking either one or both of the foot-pedals in any desired position to serve as stationary foot-rests, for regulating the tension on the brake-shoe, and certain other functions and advantages in the operation of this type of vehicles, as will hereinafter be explained.

With these ends in view, our invention consists in certain features of construction and combinations of parts, as will be hereinafter described, and pointed out in the claims.

In the accompanying drawings, Figure 1 is a plan view of a tricycle embodying our improvement, the seat being removed to better illustrate our invention. Fig. 2 is a vertical longitudinal section. Fig. 3 is a view, partly in section and partly in side elevation, of the divided axles and one of the driving-disks. Fig. 4 is a detached plan view of one of the driving-disks, the axle-box, yoke, and cam-plate. Fig. 5 is a detached view of the pivotal arms secured to the foot-pedal. Fig. 6 is a detached view of the disk-locking devices and brake mechanism.

A A' are the main driving-wheels, and B the guide-wheel, the latter being located in front of the driving-wheels and supported within a yoke, B', which is swiveled in a socket, a, secured to the forward end of the bar a', the rear end of which is rigidly secured to the side bar, C'.

The main frame consists of the transverse bar C, which is located a short distance in

front of the axle, and the curved side bars, C', 50 the latter being downwardly curved, and having secured to their lower ends the bars b b'. To the rear ends of the bars b b' are journaled the opposite ends of the rock-shaft b<sup>2</sup>, to which are secured the brake-shoes b<sup>3</sup>. The opposite 55 ends of the bars b b' are bifurcated, forming arms or pedal-lever stops c c'. Between said stops of said arms is rigidly secured the cross bar or rod D, upon the opposite ends of which are journaled the sleeves D' D<sup>2</sup>, to which are 60 rigidly attached the rear ends of the levers E E', the forward ends of which have foot-pedals E<sup>2</sup>, of any approved form of construction, pivoted thereto. The stops c c' are each provided with a yielding pad, c<sup>3</sup>, so as to cushion 65 the blow of the levers E E' as they are raised and lowered.

F F' represent the divided axles, having the driving-wheels A A' rigidly secured to their outer ends. 70

To the axle F is rigidly secured a face-gear, G, and a sleeve, H, whereby both the face-gear and sleeve revolve with the axle. Sleeve H is made in two parts, e e', which are secured together at their widest portions by means of 75 screws e<sup>2</sup> or in any suitable manner. The small portion e<sup>3</sup> of the sleeve-section e' fits upon the axle F', and is provided with a screw, e<sup>4</sup>, that projects into an annular groove, e<sup>5</sup>, in said axle, and thereby prevents its longitudinal 80 displacement. The inner end of the axle F' is constructed with an open slot, in which is placed a pin, f, arranged at right angles to the axle, and to the opposite ends of the pin is attached the face-gear G'. A rod, G<sup>2</sup>, extends 85 through the bore G<sup>3</sup> in the axle F', one end of said rod being secured to the face-gear pin f, while spiral spring g is placed in the bore in the outer end of the axle and serves to force the rod G<sup>2</sup> inward, and thereby retain the face- 90 gear in engagement, and thus cause the two axles to be locked and revolve together as a single axle. Axle F' is further provided with an elongated slot, h, adjacent to the inner hub-section of the driving-wheel, through which 95 slot is inserted a pin, h', which passes through a hole, h<sup>2</sup>, in the rod G<sup>2</sup>. The outer ends of the pin h' enter holes formed in a sliding col-

lar, I, mounted on the axle. A cam-plate, J, is mounted on the axle F', the outer face of said plate bearing against the inner face of the collar I. The upper side of the plate J is provided with an inwardly-projecting flange, *i*, which overlaps the yoke K, and thus prevents the plate from revolving with the axle.

L is a yoke provided with a rack, *l*, with which engages a pinion, L', secured to the lower end of the guiding-handle L<sup>2</sup>. To the forward end of the yoke is pivoted a rod, L<sup>3</sup>, the forward end of the latter being pivoted to an arm, *l*<sup>2</sup>, secured to the spindle of the guide-wheel-supporting yoke. The yoke L is constructed with two depressions or cam-slots, M, in which are received correspondingly-shaped cam projections, M', on the inner face of the cam-plate J.

The operation of the parts described is as follows: When the tricycle is being driven in a straight line, the divided axles are locked and revolve together, and the cam projections on the cam-plate engage in the cam slots or depressions in the yoke, so that the machine may be driven by one or both of the driving-disks N N', and the guide-wheel being held from turning either to the right or left by the cam-plate, no power need be exerted on the guide-handle to cause the machine to be driven in a straight line. When it is desired to turn the machine either to the right or left, the guiding-handle is turned either to the right or left, according to the direction the machine is to be turned, which serves to turn the guide-wheel, and at the same time to disengage the divided axles. As the yoke being moved either forward or backward serves to force the cam-plate and the collar I outward, and as the face-gear G' is connected with said collar by the rod G<sup>2</sup>, it is retracted from the face-gear G', thereby allowing the two axles to be operated independently of each other. Thus in turning a curve to the right the right-hand driving-wheel may remain idle or practically stationary while the left-hand driving-wheel is being driven, and hence enable the machine to be readily propelled around a sharp curve in either direction without danger of upsetting or of subjecting the driving mechanism to undue strain or wear. When the machine has been propelled around the desired curve and is to be started again in a straight line, the guide-handle is reversed, allowing the cam projections on the cam-plate to enter the depressions or slots in the yoke, thereby preventing the guide-wheel-supporting yoke from turning either to the right or left, and thus causing the machine to travel in a straight line.

The driving-disks may be constructed in any approved manner; but the preferred form of construction is that shown and described in Letters Patent No. 257,375, granted to A. H. Overman, the only difference being that in the present construction it is connected directly with the axles instead of to the driving-wheels.

O represents the driving-straps, the upper

ends of which are attached to the driving-disks, while the lower end of each strap is secured to plates O', journaled at one end upon an outwardly-projecting wrist-pin, *m*, secured to an arm, *m*', that is pivoted to the foot-pedal lever. A pin, *m*<sup>2</sup>, is secured to the opposite side of the free end of the pivoted arm and extends beneath the lever, the pin projecting inwardly a sufficient distance to enable it to be operated by the foot of the rider. By this arrangement of devices the effective leverage of the pedal-levers may be readily changed to accommodate different grades, as the arm by its adjustment toward or from the pedals transfers the point of attachment of the driving-strap nearer or farther from the fulcrum, and thus varies the leverage. On a level road the arm is swung around so that the wrist-pin, to which the strap is attached, will be at its nearest point to the fulcrum of the foot-levers. In ascending a grade the arm is swung around, so that the power will be applied at a greater distance, thereby increasing the leverage and lessening the speed accordingly. This is a very valuable and important feature, as it enables the vehicle to be easily propelled over uneven and hilly roads.

Driving-disks N N' are each provided with a notch, *p*, (one or more,) with which engages the locking-pawl P, pivoted to the side bar of the frame. To the pawl is pivoted a handle, P', the lower end of which is constructed with an inclined face, *p*', and a flat face, *p*<sup>2</sup>. By retracting the handles so that the flat face *p*<sup>2</sup> rests upon the frame the pawl is held in an unlocked position. By moving the handle in the opposite direction the pawl is depressed by the spring *p*<sup>3</sup> and engages in the notch *p* in the driving-disks, thereby preventing the latter from rotating and enabling the foot-pedal to be used as a stationary foot-rest. In descending a grade both disks may be locked, and thus both pedals used as stationary foot-rests.

Q represents one of the handles mounted in a socket-standard, Q', and is provided with a shank, *q*, provided with a series of depressions, within which engages a set-screw, *q*', for securing the handle in any desired vertical adjustment.

To the socket-standard Q' is secured, or formed integral therewith, an arm, Q<sup>2</sup>, having a ratchet-bar, Q<sup>3</sup>, at its outer end.

To the frame of the machine is pivoted a bell-crank lever, R, the short arm *r* of which has pivoted thereto a rod, *r*', the opposite end of which is pivoted to an arm on the rock-shaft for actuating the brakes. The long arm R' of this bell-crank is made hollow, and has inserted therein a rod, S, provided with a knob, S', at its upper end, which projects above the upper end of the arm R', while the lower end of the arm engages a pawl, S<sup>2</sup>. The rod S is encircled by a spiral spring, one end of which rests on the shoulder *s* at the bottom of the hole in the arm, while the upper ends rests against

the knob S'. By depressing the knob S' the pawl is disengaged from the ratchet-bar, thereby enabling the brake-lever to be moved backward or forward to release the brake or to apply the brake-shoes under any desired tension.

It is evident that many slight changes in the construction and relative arrangement of parts might be resorted to without departing from the spirit of our invention, and hence we would have it understood that we do not restrict ourselves to the exact construction and arrangement of parts shown and described; but,

Having fully described our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. In a tricycle, the combination, with the driving-wheels secured to independent axles, of devices for simultaneously locking and unlocking said axles and actuating the guide-wheel, substantially as set forth.

2. In a tricycle, the combination, with the driving-wheels secured to a divided axle, and driving-disks attached to both sections of said axle, of a guide-wheel, and means for connecting and disconnecting the divided axle and actuating the guide-wheel simultaneously, substantially as set forth.

3. The combination, with the divided axle, and a sleeve secured to one axle and serving as a bearing for the inner end of the axle, of a face-gear rigidly secured to the inner end of one axle, a sliding face-gear connected to the inner end of the other axle, a rod extending into a bore in one of the axles, a spring for retaining the face-gear in engagement, and devices for throwing said gear out of engagement, substantially as set forth.

4. The combination, with an axle having a sleeve-bearing and a face-gear rigidly secured thereto, of another axle supported in said sleeve and provided with a slotted end, a sliding face-gear encircling said slotted end, a pin fastened to the sliding gear and extending through the slot, and a rod for moving the sliding gear back and forth, substantially as set forth.

5. The combination, with divided axles and face-gears for connecting and disconnecting the axles, of a rod connected at one end of the gears, a sliding collar connected to said rod, and cam devices for imparting motion to said collar and actuating said rod, substantially as set forth.

6. In a tricycle, the combination, with the divided axles and face-gears for connecting the same, of the guide-handle, yoke, cam-plate, collar, and rod, substantially as set forth.

7. In a tricycle, the combination, with a sliding collar attached to the rod for retracting the face-gear, of the yoke provided with cam slots or depressions, and a cam-plate provided with cam projections, substantially as set forth.

8. In a tricycle, the combination, with a slid-

ing collar, of the yoke provided with cam slots or depressions, and a cam-plate provided with cam projections, and a flange overlapping the yoke, substantially as set forth.

9. In a tricycle, the combination, with a divided axle, the outer ends of which have driving-wheels secured thereto, and independent driving-disks mounted on the sections of said axle, of devices for guiding the tricycle, and means for connecting and disconnecting the divided axle by actuating the guiding mechanism, substantially as set forth.

10. In a tricycle, the combination, with the pedal-lever and driving-strap, of an arm pivoted to the pedal-lever, said arm having a wrist-pin secured to its free end for the attachment of the driving-strap, and a stop-pin projecting from the opposite side to engage with the pedal-lever, substantially as set forth.

11. In a tricycle, the combination, with the pedal-lever and driving-strap, of an arm pivoted to the pedal-lever and having the strap secured thereto, said arm adapted to be partly rotated to change the leverage of the pedal-levers, substantially as set forth.

12. In a tricycle, the combination, with the foot-pedals, of a supporting-bar provided with diverging arms serving as stops to limit the movement of said lever, substantially as set forth.

13. In a tricycle, the combination, with the foot-pedal, of a supporting-bar provided with diverging arms serving as stops for the pedal-lever, and yielding pads secured in the outer ends of said arms, substantially as set forth.

14. In a tricycle, the combination, with a driving-disk provided with a notch, (one or more,) of a pawl for retaining said disk in a stationary position, substantially as set forth.

15. In a tricycle, the combination, with a driving-disk, of devices for securing the disk against rotary movement and causing the pedals to serve as stationary foot-rests, substantially as set forth.

16. In a tricycle, the combination, with a driving-disk provided with one or more notches, of a pawl, a spring for depressing the pawl, and a cam-lever for raising and lowering the said pawl, substantially as set forth.

17. In a tricycle, the combination, with the brake-shoes and rod, of a bell-crank lever, provided with a spring-pressed rod and pawl, and a ratchet-bar secured to or formed integral with the socket-standard of one of the handles, substantially as set forth.

In testimony whereof we have signed this specification in the presence of two subscribing witnesses.

ALBERT H. OVERMAN.  
CHARLES F. HADLEY.

Witnesses:

CHAS. M. TAYLOR,  
J. P. KELLY.