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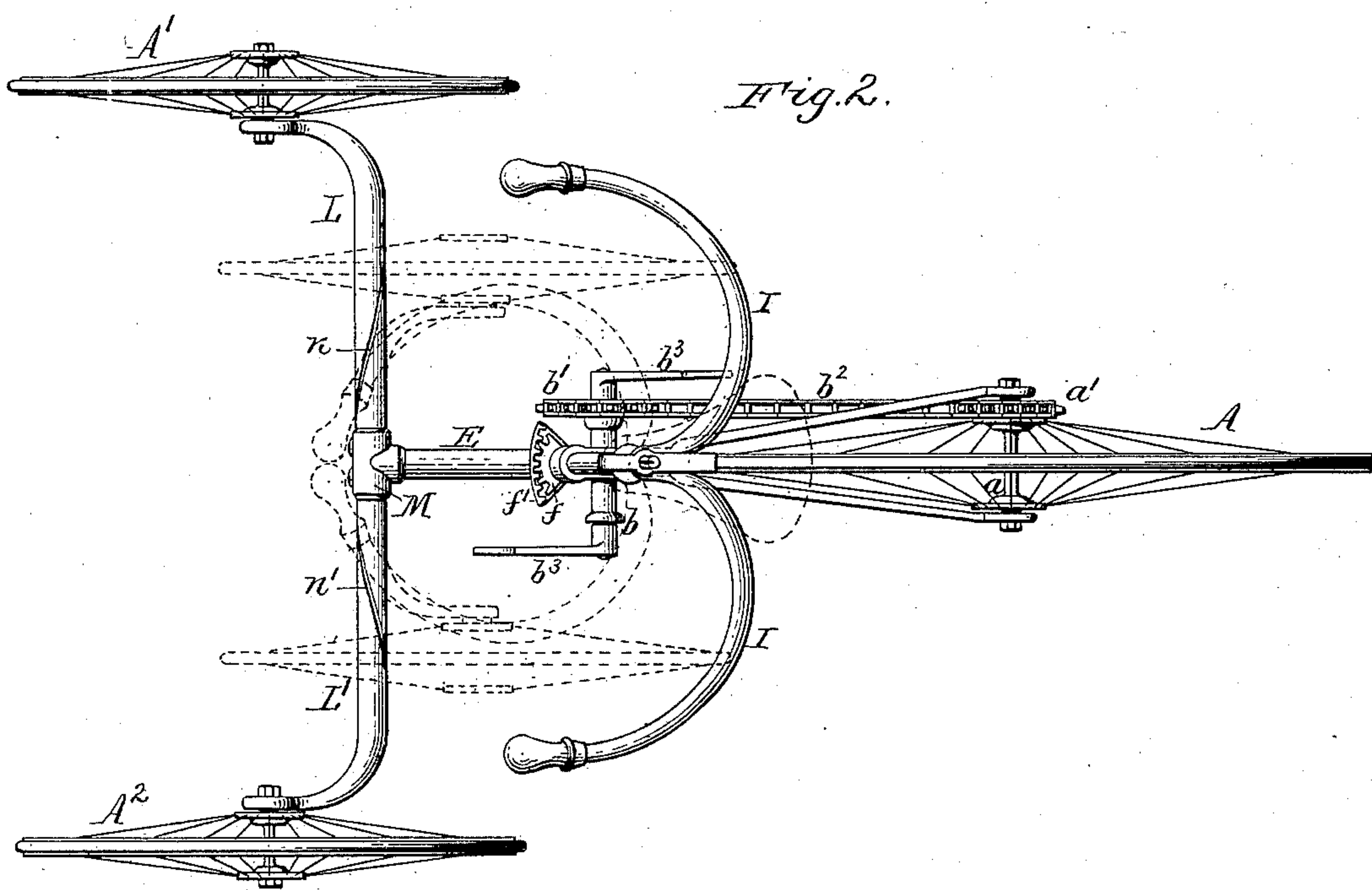
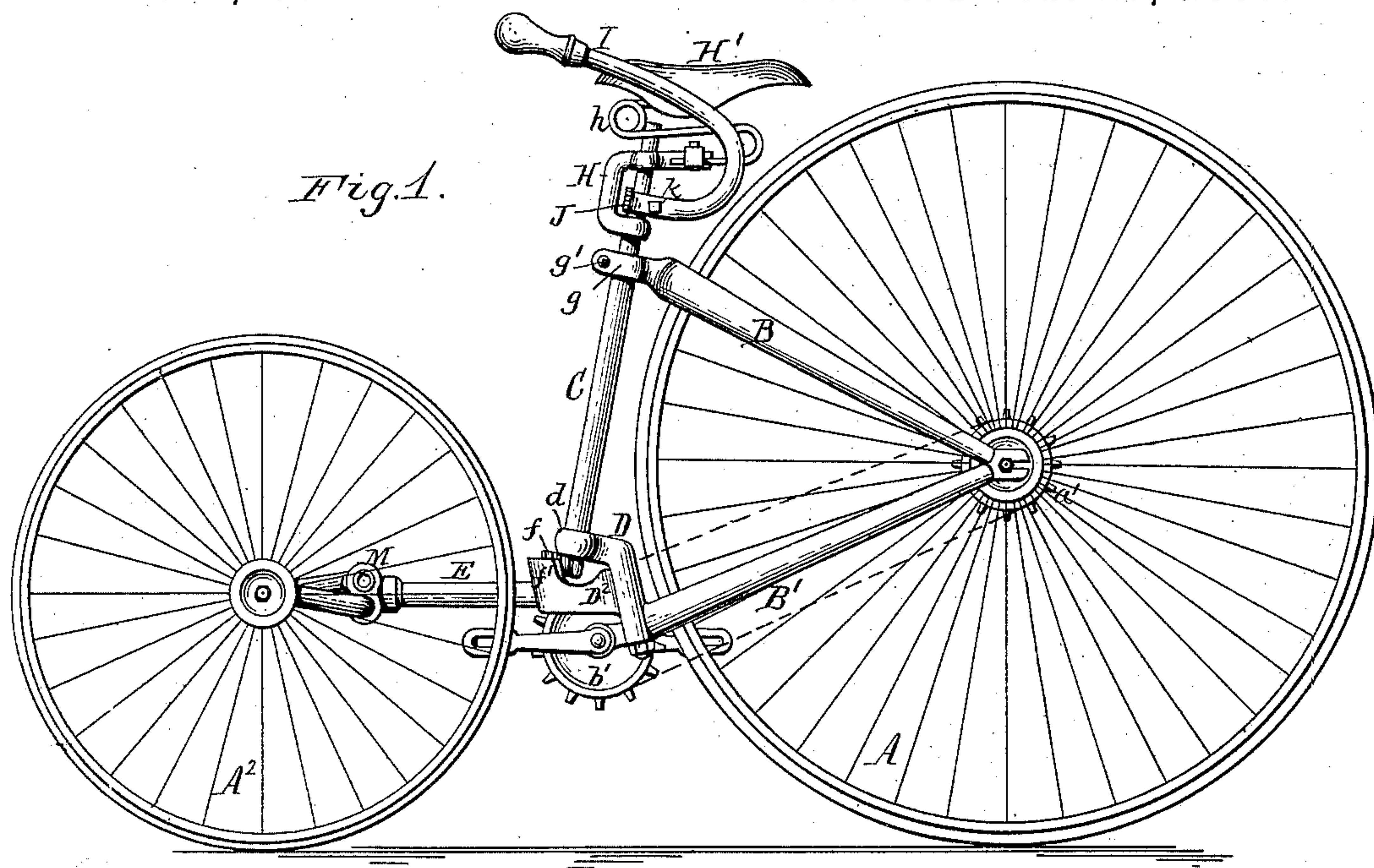
2 Sheets—Sheet 1.

E. G. LATTA.

VELOCIPÈDE.

No. 378,693.

Patented Feb. 28, 1888.



Theo. L. Popp.
G. Buchheit Jr. Witnesses.

E. G. Latta Inventor.
By Wilhelm H. Bonner.
Attorneys.

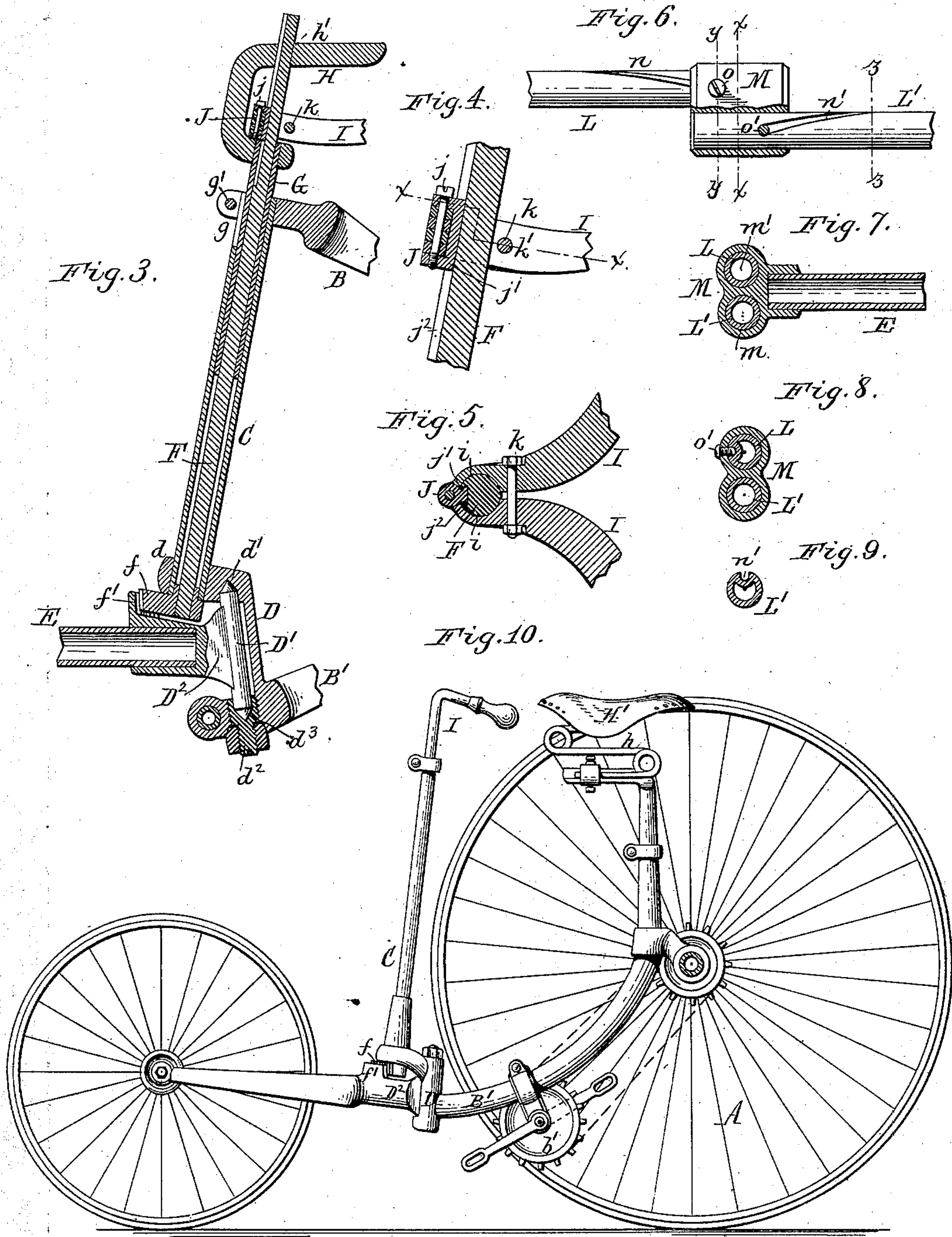
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2 Sheets—Sheet 2.

E. G. LATTA.
VELOCIPEDE.

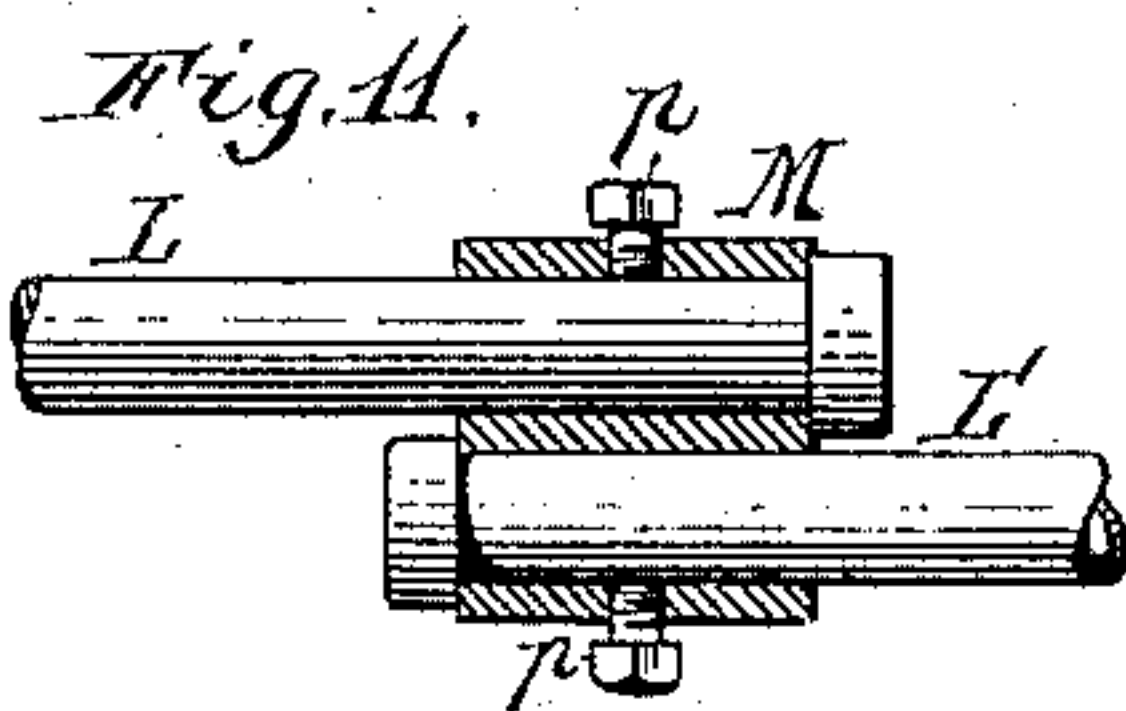
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Witnesses:

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UNITED STATES PATENT OFFICE.

EMMIT G. LATTA, OF FRIENDSHIP, NEW YORK, ASSIGNOR TO THE POPE
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VELOCIPEDÉ.

SPECIFICATION forming part of Letters Patent No. 378,693, dated February 28, 1888.

Application filed September 17, 1887. Serial No. 249,915. (No model.)

To all whom it may concern:

Be it known that I, EMMIT G. LATTA, of Friendship, in the county of Allegany and State of New York, have invented new and
5 useful Improvements in Velocipedes, of which the following is a specification.

The object of this invention is to produce a light, durable, and efficient tricycle which shall be safe in use and which will permit the
10 rider to dismount readily; also, to construct the machine in such manner that the same can be collapsed or reduced in size, so as to occupy little storage-room and to enable the machine to pass through narrow doors or passages.

15 The invention consists of the improvements which will be hereinafter fully set forth, and pointed out in the claims.

In the accompanying drawings, consisting of two sheets, Figure 1 is a side elevation of
20 my improved tricycle. Fig. 2 is a top plan view thereof with the saddle removed. Fig. 3 is a vertical section of the steering-head and connecting parts on an enlarged scale. Fig. 4 is a vertical section of the upper portion of
25 the steering-post, showing the manner of attaching the handle-bars thereto. Fig. 5 is a horizontal section in line xx , Fig. 4. Fig. 6 is a fragmentary sectional elevation of the axle of the steering-wheels and the coupling-
30 sleeve connecting the inner ends thereof. Figs. 7, 8, and 9 are cross-sections in lines xx , yy , and zz , Fig. 6 respectively. Fig. 10 is a sectional elevation showing my improved steering-gear applied to a tricycle having a single
35 steering-wheel and two driving-wheels. Fig. 11 is a modified construction of the coupling connecting the inner ends of the axle and the steering-wheels.

40 Like letters of reference refer to like parts in the several figures.

A represents the driving-wheel, and $A' A^2$ the steering-wheels, arranged in front of the same.

45 a represents the hub of the rear wheel, upon which is mounted a sprocket-wheel, a' ; and b is the crank-shaft, arranged in front of the rear wheel, and which is provided with a sprocket-wheel, b' , the sprocket-wheels a' and b' being connected by an endless chain, b^2 .

50 b^3 represents the crank-arms, secured to the crank-shaft, and to which the pedals are at-

tached. The main frame, in which the driving-wheel is mounted, consists of an upper fork, B, a lower fork, B', an upright front tube, C, and a steering-head, D. The branches of the
55 forks are secured together with their rear ends on the same side of the driving-wheel and carry the hub a on a stationary axle in the usual manner. The upper fork, B, is secured with its front end to the upper end of the tube C. The lower fork, B', is secured with its
60 front end to the lower end of the steering-head. The steering-head D is arranged in front of the driving-wheel A and secured with its upper end to the lower end of the tube C
65 by means of a collar, d , formed on a lateral extension of the steering-head.

D' is the spindle, arranged in the steering-head and provided with a neck, D^2 , extending
70 forwardly therefrom. The steering-head and the spindle D' are slightly inclined forwardly, as clearly shown in Fig. 3, to cause the rear wheel to cant or incline inwardly in turning, thereby lessening the danger of upsetting the machine. The steering-head D is provided at
75 its upper end with a conical seat, d' , for the upper spindle-center and at its lower end with an adjustable nut, d^2 , which is provided with a conical seat, d^3 , for the lower spindle-center.

E represents a reach extending forwardly
80 from the neck D^2 of the spindle D' to the axle of the steering-wheels $A' A^2$.

F represents the upright steering-post, turning in the tube C and provided at its lower
85 end with a gear-segment, f , which meshes with an internal gear-segment, f' , formed on the upper side of the spindle or neck D^2 , as clearly shown in Fig. 3, so that by turning the steering-post F the reach E, with the front axle and steering-wheels $A' A^2$, will be swung in one or
90 the other direction. The gear-segment f , secured to the steering-post F, is made of somewhat smaller radius than the segment f' , so as to give the rider the necessary leverage to render the steering easy.

95 G represents a short tube arranged in the upper end of the tube C on the steering-post F for supporting the saddle. The tube G is secured in the tube C by means of the front portion of the upper fork, B, which is provided
100 at its front end with a split collar, g , surrounding the upper end of the tube C and having a

clamping-bolt, g' , whereby the split collar is firmly secured to the tube. The upper end of the outer tube, C, is split longitudinally, as shown in Fig. 3, to enable the collar g to clamp the inner tube, G. This construction enables the tube G to be adjusted in the tube C, so as to raise and lower the saddle.

H represents a bar or frame secured to the upper end of the tube G and extending upwardly and backwardly therefrom. The frame H forms a support for the saddle H', which latter is provided with a spring, h , which is adjustably secured to the frame H in any suitable manner. The steering-post F turns freely in the inner tube, G, and extends with its upper end through an opening, h' , formed in the upper portion of the saddle-supporting frame H.

I represents the handle-bars, adjustably secured to the steering-post above the tube G and extending backwardly, outwardly, and upwardly on opposite sides of the saddle, as shown in Fig. 1. This construction of the handle-bars leaves the front of the machine entirely open and unobstructed between the steering-wheels, which enables the rider to dismount easily and quickly when required, and it also relieves the hands of the rider from the vibration which is received when the handle-bars are attached directly to the steering-head. The inner ends of the handle-bars are provided with concave recesses or seats i , which rest against opposite sides of the steering-post, and are hinged by an upright bolt, j , in front of the steering-post to a vertically-adjustable block, J, attached to the steering-post above the tube G. The block J is provided on its rear side with a dovetail tenon or feather, j' , which enters a longitudinal dovetail groove, j'' , formed in the front side of the steering-post F.

k represents a clamping-bolt which passes through horizontal openings k' , formed in the handle-bars in rear of the steering-post F, and whereby the handle-bars are firmly secured to the steering-post. Upon loosening the bolt k the block J and the handle-bars can be raised and lowered on the steering-post.

The above-described arrangement of the saddle and handle-bars permits a slight independent adjustment of the saddle and handle-bars; but when a considerable movement of either is required it is necessary to adjust both the saddle and handle-bars.

The herein-described steering mechanism is equally applicable to and desirable for tricycles having two rear driving-wheels and a front steering-wheel, as shown in Fig. 10.

The axle of the steering-wheels $A' A^2$ is composed of two tubular sections, L L', which are secured at their outer ends to the steering-wheels and connected at their inner ends by a coupling or socket, M. As shown in Fig. 1, the inner end of the section L is arranged above the inner end of the section L', and the coupling M is provided with two transverse openings, $m m'$, arranged one above the other and receiving the inner ends of the two sec-

tions. The outer end of the section L is bent forwardly and downwardly to the hub of the right-hand steering-wheel, A' , and the outer end of the section L' is bent forwardly and upwardly to the hub of the left-hand steering-wheel, A^2 , as shown in Figs. 1 and 2. The inner ends of the sections L L' are arranged loosely in the openings of the coupling M and are provided with spiral grooves $n n'$, which extend from the inner ends of said sections to within a short distance of the bent portions thereof.

$o o'$ represent two studs or pins secured to the coupling M, and projecting with their inner ends, respectively, into the grooves $n n'$ of the sections L L'.

The weight of the machine and rider tends to hold the studs $o o'$ in the inner ends of the grooves $n n'$, and thus retains the steering-wheels in their proper extended position. When it is desired to fold or collapse the machine, the front end of the machine is raised. The weight of the wheels, acting upon the bent outer ends of the axle-sections L L', causes the wheels to descend and turns the axle sections in the coupling M. This movement of the axle-sections causes the studs $o o'$ to bear against the sides of the spiral grooves $n n'$, whereby the axle-sections and the wheels $A' A^2$ are drawn inwardly until the axle-sections have been turned about a quarter-turn. The front end of the machine is then lowered, so as to permit the weight of the machine to rest on the wheels, and a slight forward movement is given to the machine, which causes the axle-sections L L' to be drawn inwardly still farther by the studs $o o'$ and spiral grooves $n n'$ until the axle-sections and wheels assume the position represented in Fig. 2, in which position the studs $o o'$ rest against the outer ends of the grooves $n n'$. In this manner the machine is readily reduced in width and length without the use of tools or loosening any of its parts. This permits the machine to pass through narrow passages or doors and to be stored in a small space.

If desired, the machine may be used in this position as a narrow-gage machine.

If it is desired to store the machine in the smallest possible space, the handle-bars are folded forwardly, as represented by dotted lines in Fig. 2, by removing the clamping-bolt k and swinging the handle-bars upon the vertical bolt j as a pivot.

If desired, the spiral grooves $n n'$ and pins $o o'$ of the axle-sections may be omitted and the latter be secured in the coupling M by means of set-screws p , as shown in Fig. 11, in which case the wheels are pressed together after loosening the set-screws. This construction is less expensive than that first described, but is not so convenient.

I claim as my invention—

1. The combination, with the steering-head and the spindle provided with a gear-segment, of a steering-post centered above and between the spindle and its gear-segment and

provided with a gear-segment meshing with the gear-segment of the spindle, substantially as set forth.

2. In a velocipede, a main frame composed of an upright tube, C, upper and lower forks, B B', and a steering-head, D, secured with its upper end to the lower end of the upright tube C and with its lower end to the front end of the lower fork, B', substantially as set forth.

3. The combination, with the main frame and the driving and steering wheels, of a steering-head and spindle located at or near the center of the machine and inclined forwardly, substantially as set forth.

4. The combination, with the upright tube C and the steering-post F, arranged within the same, of the saddle-supporting tube G, adjustably secured in the tube C and surrounding the steering-post F, substantially as set forth.

5. The combination, with the upright tube C and the saddle-supporting tube G, arranged adjustably therein, of the steering-post F, passing through the tubes C G, and handle-bars I, adjustably secured to the upper end of the steering-post, substantially as set forth.

6. The combination, with the steering-post, of a handle-bar support attached to the steering-post, handle-bars pivoted to said support and made laterally movable on their pivot toward and from the steering-post, and a clamp whereby the handle-bars are secured against the steering-post in position for use, substantially as set forth.

7. The combination, with the handle-bars and the steering-post F, provided with a dovetail groove, j^2 , in its front side, of an adjustable block, J, to which the inner ends of the handle-bars are pivoted, and provided with a dovetail tenon or feather arranged in the groove j^2 , and a clamping-bolt, k, connecting the handle-bars in rear of the steering-post, substantially as set forth.

8. In a tricycle, the combination, with two wheels, of two axle-sections, each carrying

one of said wheels, a support receiving the inner ends of said sections and permitting longitudinal movement of the sections with reference to each other, and fastenings whereby said sections are held in position in said support, substantially as set forth.

9. In a tricycle, the combination, with two wheels, of two axle-sections, each carrying one of said wheels, a coupling or support provided with two openings, one above the other, for the reception of the inner ends of said sections, and fastenings whereby the sections are adjustably secured in said openings, substantially as set forth.

10. In a tricycle, the combination, with two wheels, of an axle or transverse frame connecting said wheels, and composed of two sections provided with spiral grooves or ways, and a coupling connecting the inner ends of said sections and provided with pins or studs engaging in said grooves or ways, substantially as set forth.

11. In a tricycle, the combination, with two wheels, of an axle or transverse connecting-frame having bent outer ends to which the wheels are attached, and a support in which the axle or frame can be turned for reversing the bent axle ends, thereby reducing or increasing the length of the wheel-base, substantially as set forth.

12. In a tricycle, the combination, with two wheels, of an axle or transverse supporting-frame provided with two sections, each carrying one of said wheels and having bent outer ends, and a support in which said sections can be turned and also adjusted lengthwise with reference to each other, whereby the length and width of the wheel-base can be increased or reduced, substantially as set forth.

Witness my hand this 24th day of August, 1887.

EMMIT G. LATTA.

Witnesses:

S. G. LATTA,
M. W. POTTER.