(No Model.)

3 Sheets—Sheet 1.

E. G. LATTA.

VELOCIPEDE.

No. 447,434. Patented Mar. 3, 1891.

Fig. 1.

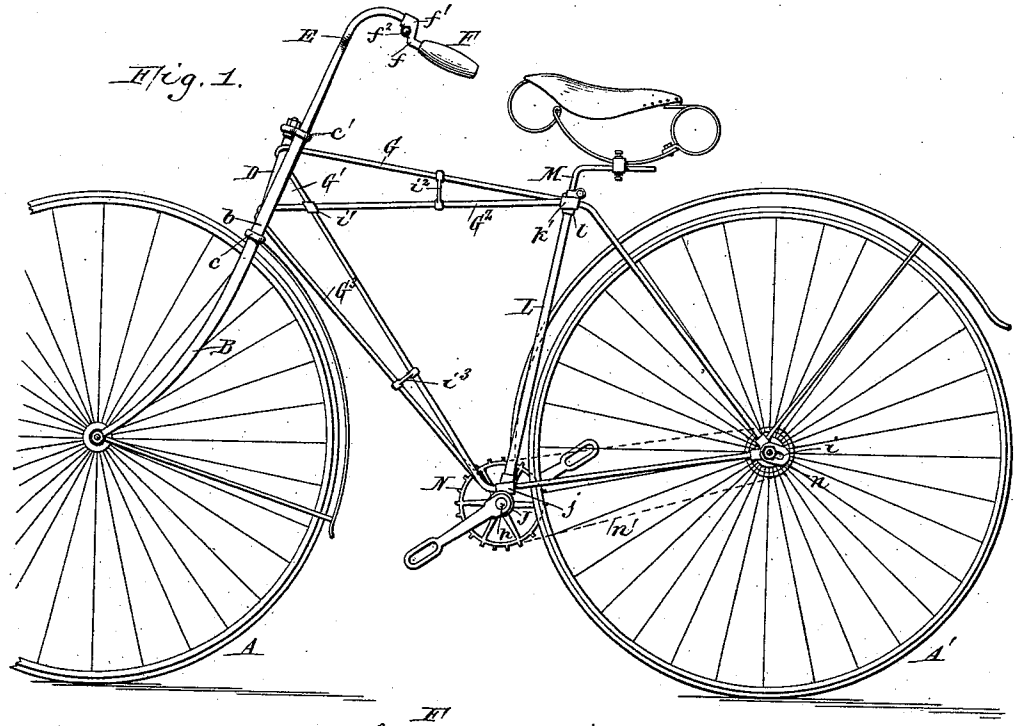


Fig. 2.

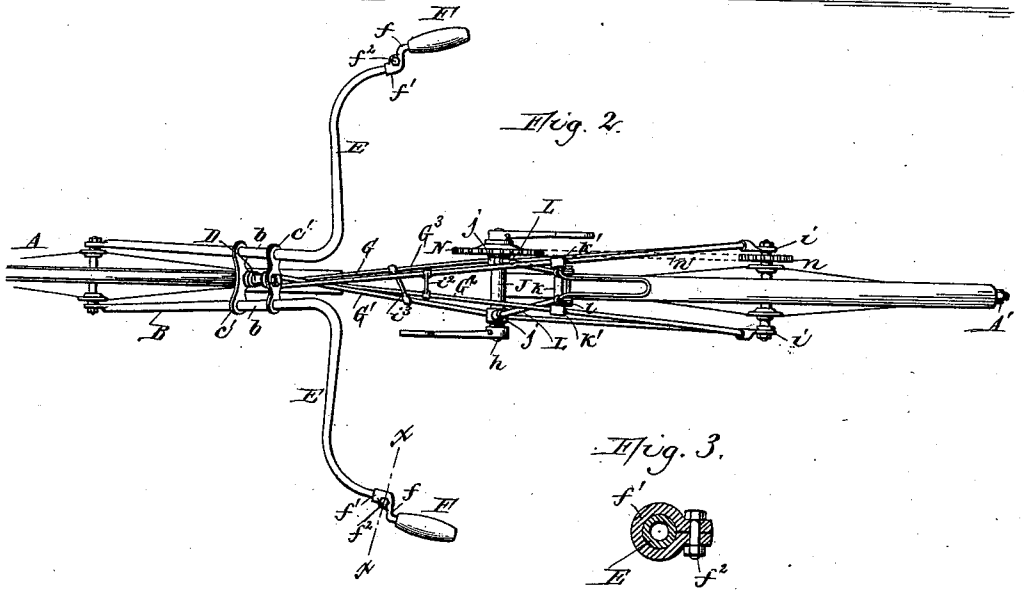


Fig. 3.

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THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

(No Model.) 3 Sheets—Sheet 2.

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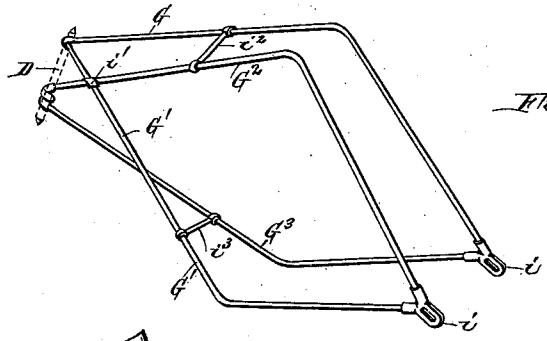


Fig. 4.

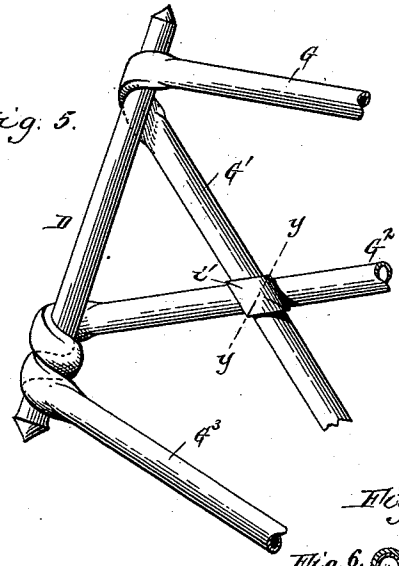


Fig. 5.

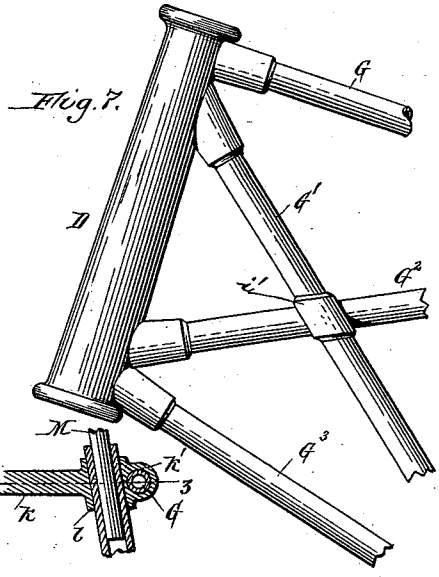


Fig. 7.

Fig. 8.

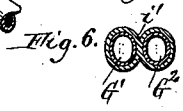


Fig. 6.

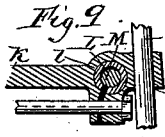


Fig. 9.

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(No Model.)

3 Sheets—Sheet 3.

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VELOCIPEDE.

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Fig. 10.

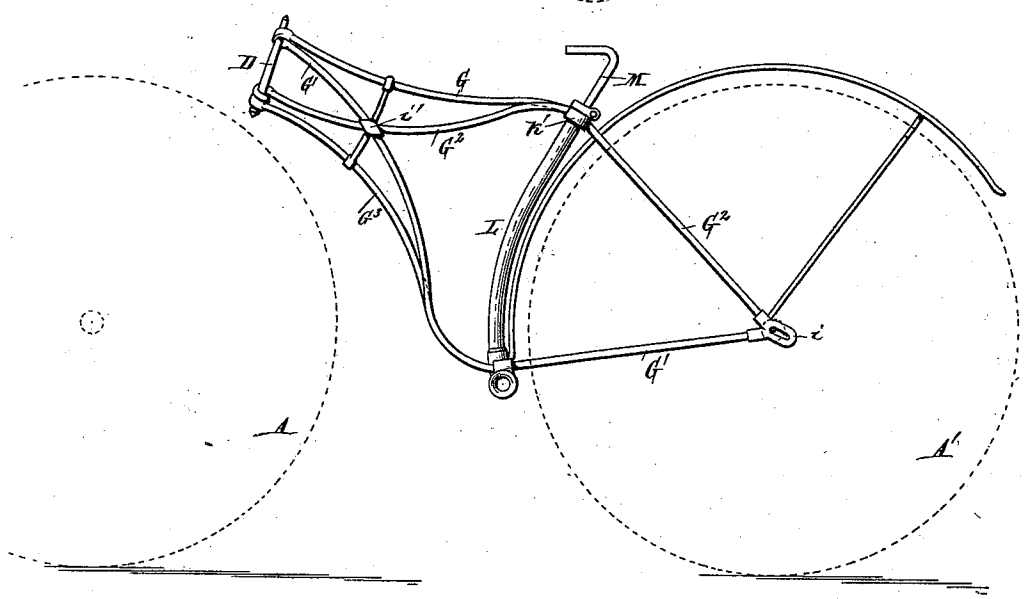
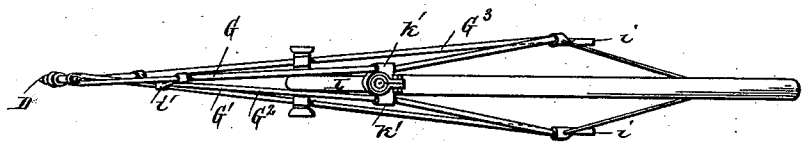


Fig. 11.



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UNITED STATES PATENT OFFICE.

EMMIT G. LATTA, OF FRIENDSHIP, NEW YORK.

VELOCIPEDE.

SPECIFICATION forming part of Letters Patent No. 447,434, dated March 3, 1891.

Application filed August 26, 1890. Serial No. 363,025. (No model.)

To all whom it may concern:

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

The principal objects of my invention are to produce a velocipede of the "Safety"-type, which shall possess great strength and at the same time be comparatively light, and to so construct the frame that its members oppose the various strains upon the frame in direct lines, as far as possible.

My invention has the further object to provide an improved adjustable handle.

In the accompanying drawings, Figure 1 is a side elevation of my improved velocipede. Fig. 2 is a top plan view thereof with the saddle omitted. Fig. 3 is a cross-section of one of the handles in line *x x*, Fig. 2, on an enlarged scale. Fig. 4 is a detached perspective view of the main frame of the machine. Fig. 5 is a detached side elevation, on an enlarged scale, of the steering-spindle and the front part of the main frame. Fig. 6 is a cross-section of the frame in line *y y*, Fig. 5. Fig. 7 is a fragmentary side elevation of a modified construction of the main frame, showing the latter as applied to a socket-steering head. Fig. 8 is a sectional elevation of the portion of the frame with which the upper parts of the saddle-supports are connected. Fig. 9 is a horizontal section in line *z z*, Fig. 8. Fig. 10 is a side elevation of another modification of the main frame. Fig. 11 is a top plan view thereof.

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

A represents the front steering-wheel, and A′ the rear driving-wheel, of the machine.

B represents the fork-arms of the steering-wheel, which are provided above the wheel with upward extensions *b b*, forming the two posts of the open steering-head. These posts or extensions are connected at their upper and lower portions by bridges or cross-pieces *c c′*.

D is the steering-spindle, formed at its ends with suitable centers, which are seated in suitable bearings formed in the bridge-pieces *c c′*.

E E are the handle-bars, extending outwardly and backwardly and which form continuations of the members *b b* of the open steering-head and the tubular fork-arms B.

F F represent the handles attached to the rearwardly-bent ends of the handle-bars. Each handle F is connected with the handle-bar by a bent or crank-shaped shank *f*, which is secured at one end to the handle and has its offset front portion provided with a socket *f′*, which fits over the end of the handle-bar. The socket *f′* is split lengthwise, as represented in Fig. 3, and is adjustably secured upon the handle-bar by a clamping bolt or screw f^2, passing through ears formed on the split portions of the socket. Upon loosening the clamping-bolt f^2 the handle may be turned on the handle-bar to locate the handle farther inward or outward or change its elevation, as may be desired, the bolt being again tightened after adjusting the handle. The socket of the shank *f′* is arranged parallel with the handle, so that the handle will maintain the same angle or backward inclination in all of its various adjustments.

By making the handle-cranks *f′* of several different sizes the manufacturer can furnish handles having a greater or less range of adjustment, as may be desired by the rider.

By constructing the handle-bars integral with the members of the steering-head and making the handles adjustable on the handle-bars, in the event of one of the handles becoming loose by the loosening of its clamping-screw the rider still retains control of the machine by the other fixed handle, which feature affords an important advantage over the usual telescopic steering-post, in which both handles become useless for controlling the machine when the fastening or clamping device of the steering-post becomes loose.

If desired, my improved handle may be applied to the backwardly-bent ends of an ordinary transverse handle-bar, and if the bar be rigidly secured to the fork or frame of the steering-wheel the same advantages of the crank-handles are secured as in the style of handle-bars illustrated in the drawings.

The main frame of the machine is composed of four principal parts or members G G′ G^3 G^3. The uppermost member G extends from

the upper portion of the steering-spindle rearwardly to a point above the crank-shaft *h* and thence rearwardly and downwardly to the axle of the rear wheel on one side of the latter. The intermediate member G′ extends from the upper portion of the steering-spindle downwardly and rearwardly to a point near the crank-shaft *h* and thence backwardly and upwardly to the rear axle on the side of the rear wheel opposite to the member G.

The members G G′ of the frame preferably consist of a continuous piece of tubing flattened near its central portion, bent or doubled around the upper portion of the steering-spindle, and secured at its ends in sockets formed in the slotted lugs *i* of the rear axle, the two members forming an approximately diamond-shaped frame, as represented in Figs. 1 and 4. The other intermediate member G^2 of the main frame extends from the lower portion of the steering-spindle rearwardly and upwardly to a point above the crank-shaft and thence downwardly and rearwardly to the rear axle-lug *i*, parallel with the adjacent rear branch of the member G and on the side of the rear wheel opposite thereto. The lowermost branch G^3 of the frame extends from the lower portion of the steering-spindle downwardly and rearwardly to the crank-shaft and thence rearwardly and upwardly to the rear axle-lug parallel with the adjacent rear branch of the member G′ and on the opposite side of the rear wheel. The members G^2 G^3 are also preferably constructed of a continuous piece of tubing flattened near its central portion and bent, coiled, or wound around the lower portion of the spindle, as more clearly represented in Fig. 5, while the ends of the tube are secured in sockets formed in the slotted lugs of the rear axle, the two members constituting an approximately diamond-shaped frame, as clearly represented in Figs. 1 and 4. It will thus be understood that the rear branches of each piece of tubing forming half of the frame are located on opposite sides of the rear wheel. The several members G G′ G^2 G^3 cross the longitudinal center line of the machine and extend rearwardly from the steering-spindle at different inclinations. The tubes G′ G^2 cross each other a short distance in rear of the steering-spindle and are connected together at their point of intersection by a coupling or union *i′*. The tubes G G^2 are preferably connected by a tie rod or brace i^2, and the tubes G′ G^3 by a similar tie-rod i^3, as represented in Figs. 1, 2, and 4. The bent central portions of the lower tubes G′ G^3 are connected together by a transverse tube J, provided on its upper side near its ends with lugs *j*, having horizontal sockets or openings *j′*, through which the adjacent portions of the tubes G′ G^3 pass, as represented in Fig. 2. The crank-shaft *h* passes through the tube J and turns in suitable bearings arranged in the ends of the tube, as represented in Fig. 2. The bent central portions of the upper tubes G G^2 are connected by a transverse bar or tube *k*, provided at its ends with horizontal sockets *k′*, as represented in Figs. 8 and 9.

L L represent upright tubes or rods arranged on opposite sides of the longitudinal center of the machine and forming saddle-supports. These tubes are secured at their lower ends in upright sockets arranged in the lugs *j* above the sockets *j′*, and at their upper ends in similar sockets *l*, formed on the connecting-rod *k* on the inner sides of the horizontal sockets *k′*, as represented in Figs. 8 and 9.

M M represent the saddle-pillars seated in the upper ends of the tubular saddle-supports. The upper ends of the latter and the sockets *k* are split vertically in their rear sides, and the split portions of the latter are contracted by a clamping-bolt, whereby the saddle-pillars are adjustably secured in the saddle-supports.

The rods or tubes L L extend in a direct line from the saddle-pillar to the crank-shaft bearings and effectually resist the alternate strains applied to the frame by the cranks. They also serve to conceal the ends of the double saddle-pillar and support the upper and lower parts of the main frame. The main frame receives the most severe strains when the front wheel strikes an obstruction, and when this occurs the tendency is to force the lower end of the spindle backwardly and its upper end forwardly. By extending the tube G^2 of the main frame from the saddle-pillar to the lower portion of the spindle and the tube G′ from the crank-shaft to the upper part of the spindle the forward pull or draft upon the upper end of the spindle is transmitted directly to the crank-shaft and saddle, while the backward push or thrust upon the lower end of the spindle is distributed in a similar manner, thereby greatly lessening the tendency to rack or spring the frame. The union or coupling *i′* greatly stiffens the frame, and the braces or ties i^2 i^3 also serve this purpose; but these parts are not indispensable.

In order to more effectually prevent loosening of the spindle under backward strains at its lower end, the tube G^2 is preferably wound around the spindle to form a complete coil, as shown; but this is not necessary with the tube G′, because the strains upon the upper end of the spindle are principally in a forward direction.

Another advantage resulting from my improved construction is that the four principal members or tubes of the frame are practically secured to the spindle at different points or elevations, which strengthens the spindle and renders it less liable to become bent or broken. By causing the tubes of the frame to cross the longitudinal center line of the machine they are brought more closely in the same plane and permit of a greater range of movement of the steering-head before striking against the same.

If desired, the front portion of the main frame may be constructed of curved tubes and the coupling i' and tie-rods i^2 i^3 be formed of a single piece, as represented in Fig. 10.

Instead of employing two upright rods or saddle-supports L L, a single rod or tube located in the center of the machine and a saddle-pillar of the ordinary form may be employed, as represented in Figs. 10 and 11.

If desired, the tubes of the main frame may be separate and secured at their front ends in sockets arranged on the rear side of the steering-head, as represented in Fig. 7; or they may be bent or coiled around a socket-steering head in the same manner that they are bent or coiled around the spindle.

N represents the sprocket-wheel mounted upon the crank-shaft, and from which motion is transmitted to the sprocket-wheel n of the rear axle by a drive-chain n', in the customary manner.

I claim as my invention—

1. The combination, with a velocipede handle-bar having backwardly-bent end portions, of a handle and a crank-shaped shank connecting the handle with the handle-bar, whereby the handle may be adjusted vertically as well as inwardly and outwardly, substantially as set forth.

2. The combination, with a velocipede handle-bar having backwardly-bent end portions, of a handle and a connecting-shank secured to the handle and having an offset portion arranged parallel with the handle and which is adjustably attached to the end of the handle-bar, substantially as set forth.

3. The combination, with a velocipede handle-bar having backwardly-bent end portions, of a handle and a crank-shaped connecting-shank secured to the handle and having a split clamping-socket, whereby it is adjustably secured to the end of the handle-bar, substantially as set forth.

4. In a velocipede, the combination, with the front and rear wheels and a steering head or pivot, of a main frame consisting of four members, each extending from the steering head or pivot to the central portion of the rear wheel and each composed of a single continuous piece or length, substantially as set forth.

5. In a velocipede, the combination, with the front steering-wheel, a rear driving-wheel, and the steering-pivot, of a main frame or reach supporting the steering-pivot at its front end, the rear-wheel axle at its rear end, and the saddle-support and driving-gear at its central portion, and having two members extending from the steering-pivot rearwardly to the saddle-support and thence downwardly to the rear-wheel axle, and two similar members extending downwardly and rearwardly from the steering-pivot and thence rearwardly to the rear axle, the four members of the frame being each composed of a single continuous piece or length, substantially as set forth.

6. The combination, with the steering-pivot, the driving-gear, and the saddle-support, of a main frame supporting said parts and having two members which connect the saddle-support with the upper and lower portions of the steering-pivot, and two members whereby the support of the driving-gear is also connected with the upper and lower portions of the steering-pivot, substantially as set forth.

7. The combination, with the steering-pivot, the saddle-support, and the driving-gear, of a main frame supporting said parts and having a member connecting the upper part of the steering-pivot with the support of the driving-gear, and a member crossing said first-mentioned member and connecting the lower part of the steering-pivot with the saddle-support, substantially as set forth.

8. The combination, with the steering-pivot, the saddle-support, and the driving-gear, of a main frame supporting said parts and having a member connecting the upper part of the steering-pivot with the support of the driving-gear, a member crossing said first-mentioned member and connecting the lower part of the steering-pivot with the saddle-support, and a union or coupling connecting the two members, substantially as set forth.

9. In a velocipede, the combination, with the steering-pivot, the saddle-support, and the driving-gear, of a main frame supporting said parts and consisting of four members extending rearwardly from the steering-pivot at different inclinations, substantially as set forth.

10. In a velocipede, the combination, with the front and rear wheels and the steering-pivot, of a main frame consisting of four longitudinal members having their front portions connected to the steering-pivot at different elevations, substantially as set forth.

11. In a velocipede, the combination, with the steering-pivot, the saddle-support, and the driving-gear, of a main frame supporting said parts and consisting of four members extending rearwardly from the steering-pivot at different inclinations, and cross ties or braces connecting the members of the frame, substantially as set forth.

12. The combination, with the front and rear wheels and the steering-pivot, of a frame or reach composed of longitudinal members formed of a rod or bar coiled or wound around the steering-pivot and having its branches extended rearwardly from the pivot, substantially as set forth.

13. The combination, with the front and rear wheels and the steering-pivot, of a main frame having two members connected to the steering-pivot at different elevations, converging rearwardly and connected to the upper part of the frame at about the same elevation, and two members connected to the steering-pivot at different elevations, converging rearwardly and downwardly and connected to the lower part of the frame at about the same elevation, substantially as set forth.

14. The combination, with the front and rear wheels and the steering-pivot, of a main

frame having a double member composed of a single continuous piece or length and having one of its rear branches secured to the rear-wheel axle on one side of the rear wheel, its other branch secured to the rear-wheel axle on the opposite side of the wheel and its front portions extending forwardly and connected to the steering-pivot, substantially as set forth.

15. The combination, with the front and rear wheels and the steering-pivot, of a main frame composed of longitudinal members extending rearwardly from the steering-pivot and crossing the longitudinal center line of the machine, substantially as set forth.

Witness my hand this 20th day of August, 1890.

EMMIT G. LATTA.

Witnesses:
W. WARD RICE,
F. C. FAY.