

(No Model.)

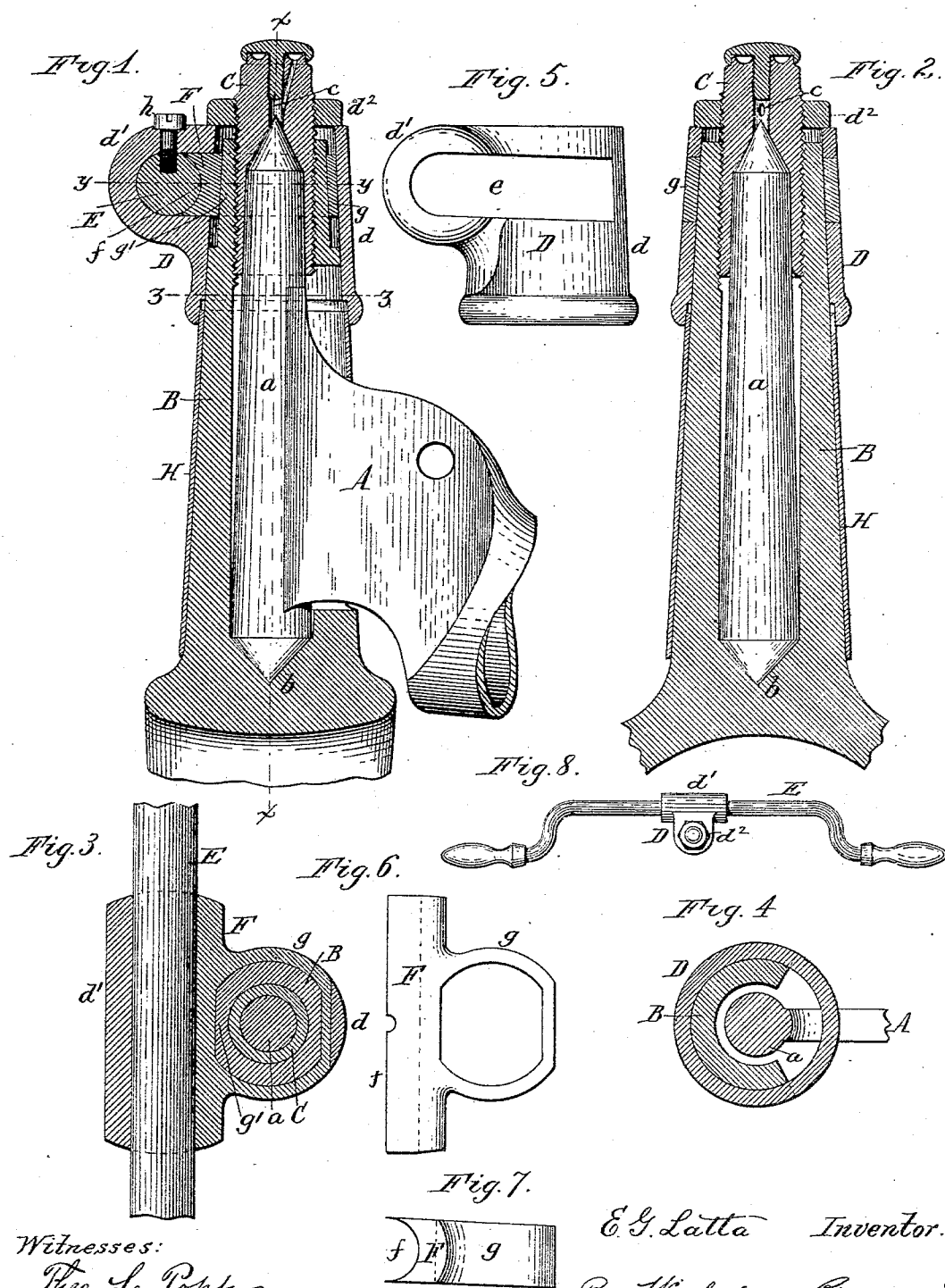
2 Sheets—Sheet 1.

E. G. LATTA.

BICYCLE.

No. 321,508.

Patented July 7, 1885.



Witnesses:

Theo. L. Popp.
Geo. E. Pitman

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E. G. Latta Inventor.

By Wilhelm A. Bonner
Attorneys.

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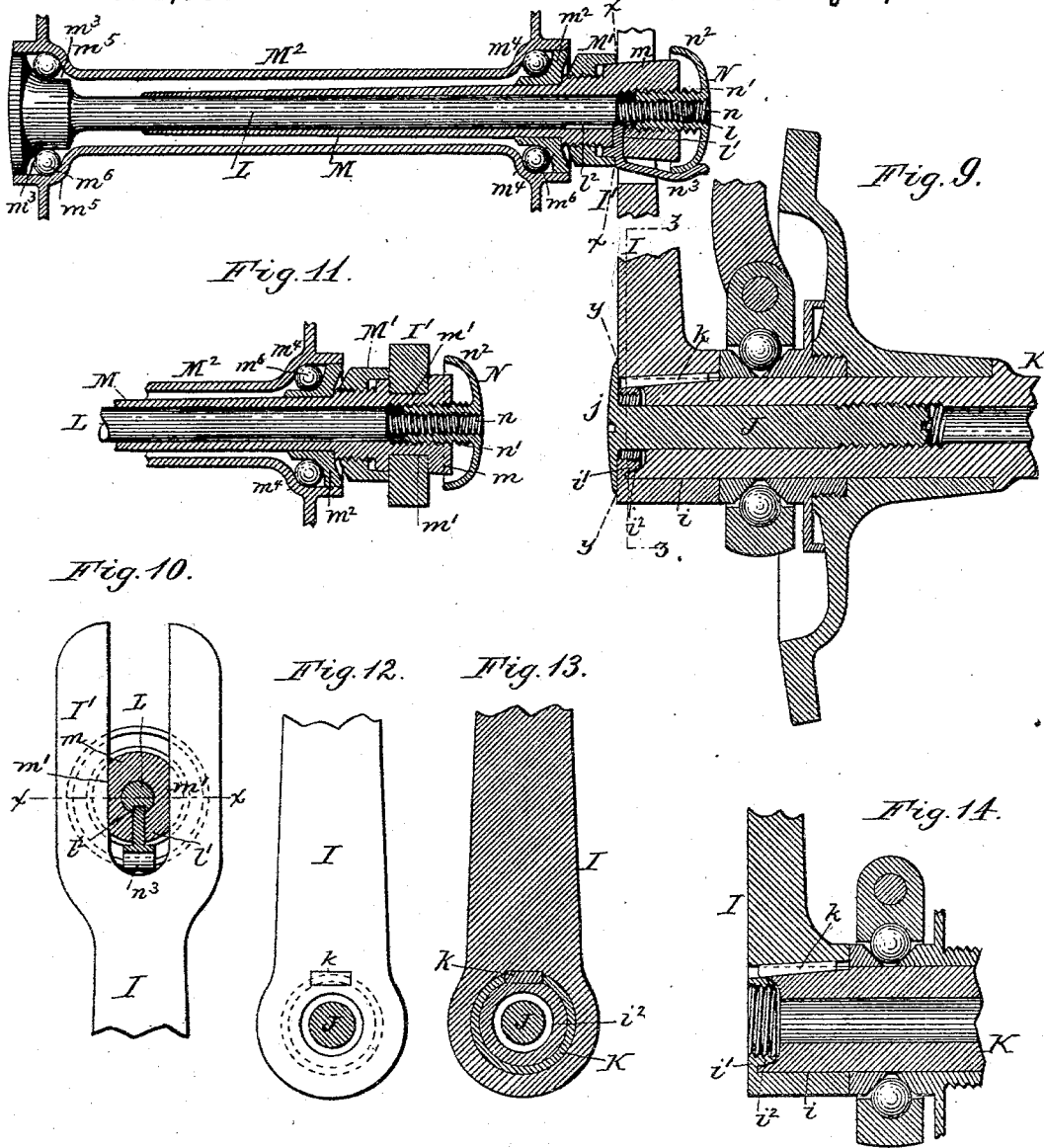
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E. G. Latta *Inventor,*
By *Wilhelm & Bonner*
 Attorneys.

UNITED STATES PATENT OFFICE.

EMMIT G. LATTA, OF FRIENDSHIP, NEW YORK.

BICYCLE.

SPECIFICATION forming part of Letters Patent No. 321,508, dated July 7, 1885.

Application filed December 10, 1884. (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 Bicycles, of which the following is a specification.

This invention relates to certain improvements in bicycles; and it has for its object to secure a bent handle-bar, made in one piece, to the steering-head, so that it can be readily removed or replaced when desired; also, in securing the cranks to the axle in such manner that the cranks can be readily detached without requiring any special tools for the purpose.

The invention also relates to certain improvements in the construction of the pedals, whereby they can be readily adjusted for wear.

The invention consists, to these ends, 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 vertical longitudinal section of the steering-head. Fig. 2 is a vertical section in line *x x*, Fig. 1. Figs. 3 and 4 are horizontal sections in lines *y y* and *z z*, Fig. 1, respectively. Fig. 5 is a side elevation of the handle-bar lug. Fig. 6 is a plan view, and Fig. 7 a side elevation, of the space-block, whereby the handle-bar is secured in the lug. Fig. 8 is a top plan view of the handle-bar on a reduced scale. Fig. 9 is a sectional elevation of one end of the axle and connecting parts, and of the crank and pedal. Fig. 10 is a sectional elevation in line *x x*, Fig. 9. Fig. 11 is a horizontal section in line *x x*, Fig. 10. Fig. 12 is a sectional elevation in line *y y*, Fig. 9. Fig. 13 is a vertical section in line *z z*, Fig. 9. Fig. 14 is a sectional elevation of one end of the axle and crank.

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

A represents the backbone or reach of the machine, provided at its front end with the usual upright center pin, *a*.

B represents the steering-head inclosing the center pin, *a*, and provided with a center bearing, *b*, in which the lower end of the center pin is supported.

C represents a screw-cap, which fits over the

upper end of the center pin, *a*, and is secured in a threaded opening in the upper part of the steering-head B.

e is an oil-passage formed centrally in the cap C.

D represents the handle-bar lug, composed of a collar, *d*, which surrounds the upper portion of the steering-head, and a horizontal sleeve or lug, *d'*, through which the handle-bar E is inserted, and which is arranged transversely in front of the collar *d*. The latter is preferably made tapering upwardly, and is secured in the steering-head by a screw-nut, *d''*. The handle-bar E is provided on both sides of the lug *d'* with bent portions, which are made in one piece with the portion which is seated in the lug *d'*, as represented in Fig. 8, so that the handle-bar cannot be passed through the ordinary cylindrical opening usually formed in the handle-bar lug. In order to permit this bent handle-bar to be passed through the opening of the handle-bar lug, this opening is extended backwardly into the sleeve or collar *d*, and made of sufficient size to permit the bent handle-bar to pass through it.

F represents a space-block which is placed in the opening *e*, for the purpose of securing the handle-bar in the same. The block F is provided on its front side with a concave face, *f*, which fits against the rear side of the handle-bar in the lug *d'*. The front portion of the block F, in which the face *f* is formed, fills that portion of the opening *e* in the lug *d'* which is not occupied by the handle-bar.

g represents an open frame or socket formed in the rear side of the block F to surround the upper portion, *g'*, of the steering-head B. The socket *g* and the portion *g'* of the steering-head are preferably flattened on one or more sides, in order to prevent the sleeve *d* from turning on the steering-head when the rider pulls on the handle-bar.

In putting the parts together the handle-bar E is first passed through the opening *e*; the block F is then placed in the opening *e* against the handle bar, and the sleeve *d*, with these parts attached thereto, is placed on the portion *g'* of the head B, and secured in place by the nut *d''*. The portion *g'* is made tapering upwardly, and in forcing the lug D downward on the head B the block F is pressed against

the handle-bar, so that a snug fit of these parts is obtained and the handle-bar securely held when the parts are carefully fitted.

In order to prevent the possibility of the handle-bar working loose in the lug d' , the bar is further secured by a set-screw, h ; and by forming several screw-holes in the handle-bar at various angles, the handle-bar can be secured in various positions.

If desired, the handle-bar lug may be made in one piece with the head B, in the usual manner, and the opening e be formed in the upper part of the head, instead of in a separate piece; but I prefer the construction shown, as it permits the use of a tubular dust-shield, H, and is otherwise more desirable.

K represents the tubular axle, and I the crank fitted on the end of the axle and held thereon against turning by a key, k , or by constructing the end of the axle and the opening i in the crank with flattened sides. The outer portion, i' , of the opening or socket i is reduced in diameter by an inwardly-projecting ring, i'' , formed in the crank, and having its rear or inner side made conical or curved to fit snugly against the concave outer end of the axle, as represented in Figs. 9 and 14. The ring i'' is provided with an internal screw-thread extending through its opening, the latter being made sufficiently long to prevent stripping of the screw-thread. The screw-thread in the ring i'' is made to fit the threaded end of the pedal-pin, or any other screw that can be readily detached from the machine and used for detaching the crank from the axle by screwing such screw into the ring i'' against the outer end of the axle, thereby forcing the crank outward and from the axle. The cone or ring i'' increases the bearing-surface of the crank on the end of the axle. The keyway in which the key k is seated extends to the outside of the crank through the ring i'' .

J represents a screw-bolt, which is screwed into the end of the hollow axle, and provided with a broad head, j , which covers the end of the key k , and prevents the latter from working out and the crank from becoming loose. This screw also serves to strengthen the outer portion of the tubular axle at the point of greatest strain.

L represents the pedal-shaft, provided at its rear end with a screw, l ; and M is a sleeve surrounding the shaft L, and provided at its inner end with a head, m , which is fitted with its recessed sides m' between the bifurcated end I' of the crank. The pedal-shaft is secured in position on the crank by a lock-nut, M'.

m^2 represents the inner cone applied to the sleeve M, and m^3 the outer cone formed on the shaft L.

M² represents the pedal inclosing the shaft L and sleeve M, and formed with the cones m^4 m^5 .

m^6 represents the balls interposed between the cones.

l' represents a pin attached to the sleeve M, and projecting into a longitudinal groove, l^2 ,

formed in the inner end of the shaft L, whereby the latter is held against turning in the sleeve M, and is permitted to move lengthwise in the same.

N represents an adjustable screw, provided with an internal thread, n , which engages with the screw l , and with an external thread, n' , which engages with an internal thread formed in the head m . The screw-threads n n' are made of differential pitch, whereby a very fine adjustment of the pedal-shaft and cones is obtained. The screw N is provided with a milled head, n^2 , and locked in position after having been adjusted by a spring, n^3 , secured to the sleeve M, and bearing against the head n^2 . The spring n^3 is preferably formed in one piece with the pin l' , as represented in Figs. 9 and 10. The bifurcated portion I' of the crank permits the introduction of the head of the pedal without disturbing the adjustment of the cones. This differential screw-adjusting device can be readily applied to pedal-shafts, as ordinarily constructed, by arranging the outer cone to slide on the outer end of the shaft and the screw, so that it forces it inwardly; but I prefer the construction herein shown and described, because it shortens the outer end of the pedal and reduces the entire width of the machine.

I claim as my invention—

1. The combination, with a bent handle-bar, of a handle-bar lug having an elongated opening through which the bent handle-bar can be passed, and a fastening whereby the bent handle-bar is secured in said elongated opening, substantially as set forth.

2. The combination, with the bent handle-bar and a handle-bar lug having an elongated opening, of a space-block inserted in said opening and securing the handle-bar in the same, substantially as set forth.

3. The combination, with the steering-head and a bent handle-bar, of a handle-bar sleeve provided with an elongated opening and a space-block having a socket which surrounds the steering-head, substantially as set forth.

4. The combination, with the steering-head B C and the sleeve D, provided with the elongated opening e , of the bent handle-bar E, space-block F, provided with socket g , and screw-nut d' , substantially as set forth.

5. The combination, with the axle having a dished or recessed end, of a crank fitted on the axle and provided in its socket with an inwardly-projecting ring fitting into the dished end of the axle, substantially as set forth.

6. The combination, with the axle, of a crank fitted on the axle and having the outer portion of its socket provided with an inwardly-projecting ring, i'' , having an internal screw-thread, substantially as set forth.

7. The combination, with the axle, of the crank I, provided with a ring, i'' , of a key, k , whereby the crank is held on the axle, and a screw, J, whereby the crank and key are held on the axle, substantially as set forth.

8. The combination, with the pedal-shaft and

pedal-cones, of a differential screw-adjusting device, substantially as set forth.

9. The combination, with the crank, of a pedal-shaft and pedal-cones, a differential screw, whereby said shaft is adjusted, and a spring, whereby said adjusting-screw is held in position, substantially as set forth.

10. The combination, with the pedal-shaft L, provided with screw l , longitudinal groove l^2 , and cone m^3 , of the sleeve M, provided with cones m^2 and a head, m , a differential adjusting-screw, N, and pin l' , substantially as set forth.

11. The combination, with the pedal-shaft L, provided with screw l , longitudinal groove l^2 , and cone m^3 , of the sleeve M, provided with cone m^2 and a head, m , a differential adjusting-screw, N, pin l' , and spring n^3 , substantially as set forth.

Witness my hand this 2d day of December, 1884.

EMMIT G. LATTA.

Witnesses:

F. B. CHURCH,
S. E. LATTA.