(No Model.) 2 Sheets—Sheet 1.

C. E. LIPE.

PEDAL CRANK.

No. 512,303. Patented Jan. 9, 1894.

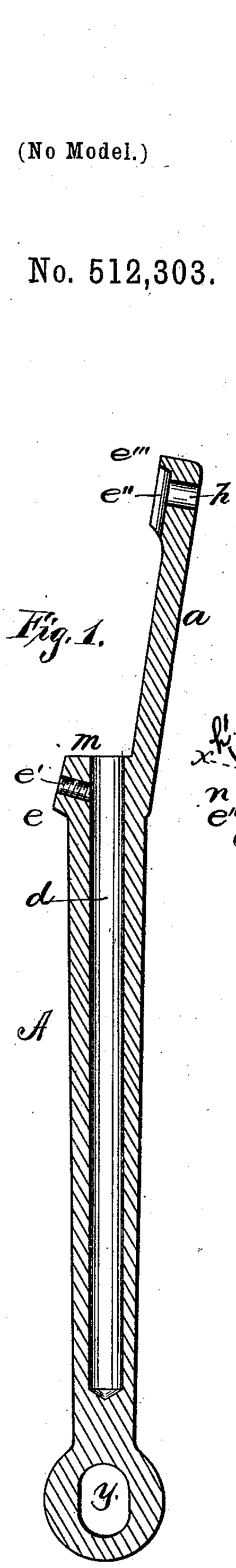

Fig. 1.

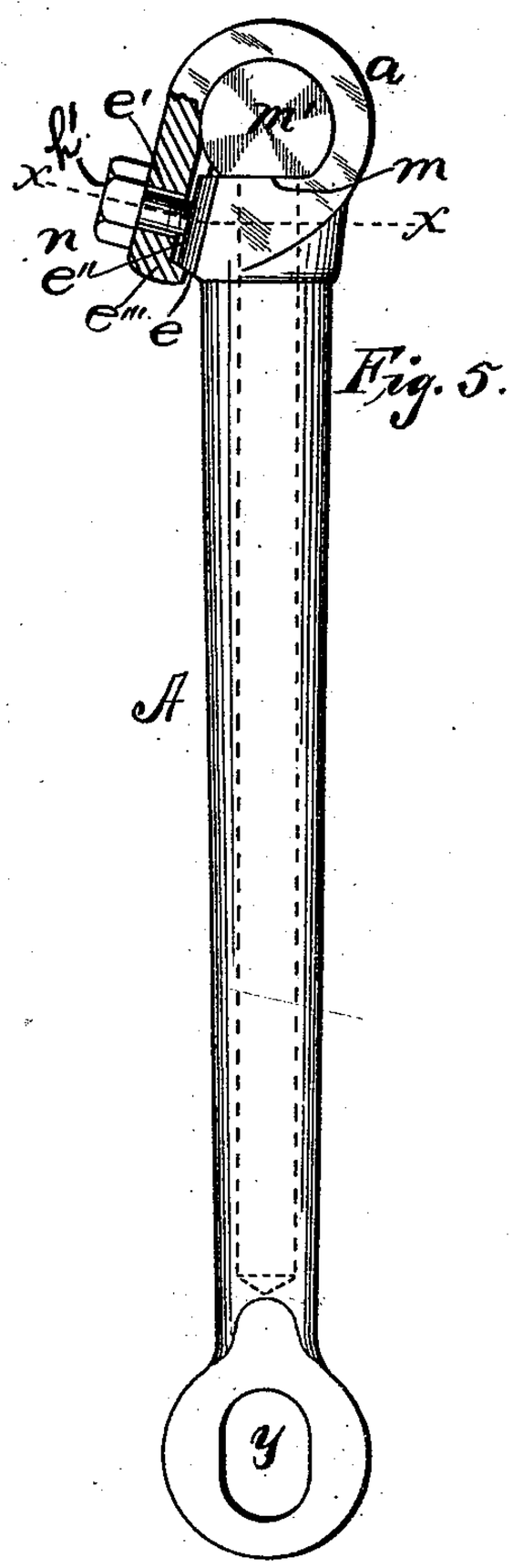

Fig. 5.

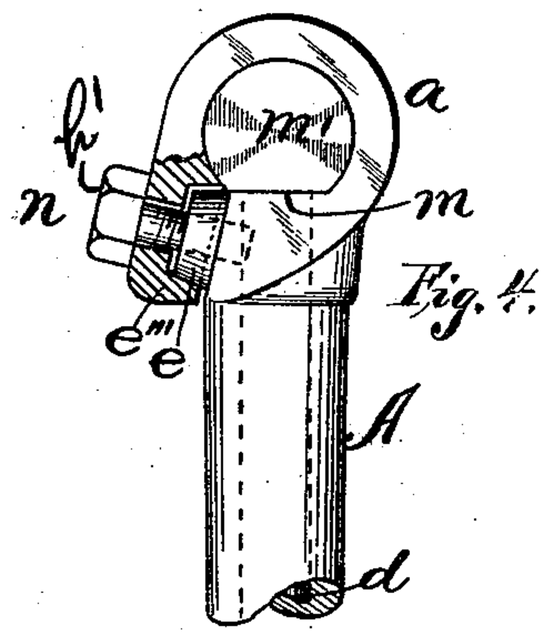

Fig. 4.

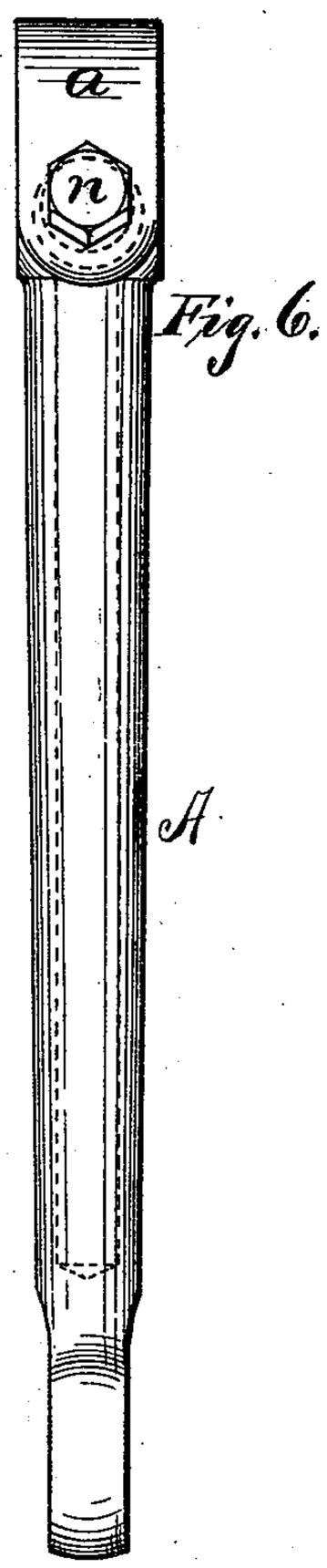

Fig. 6.

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(No Model.) 2 Sheets—Sheet 2.

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PEDAL CRANK.

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Fig. 3.

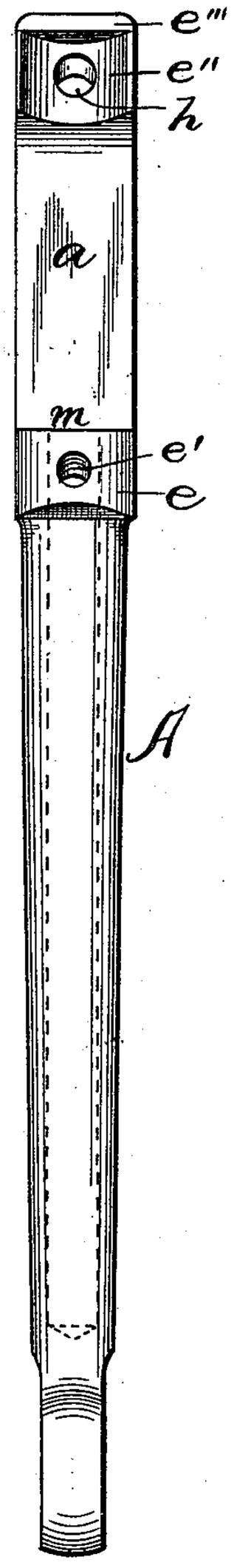


Fig. 2.

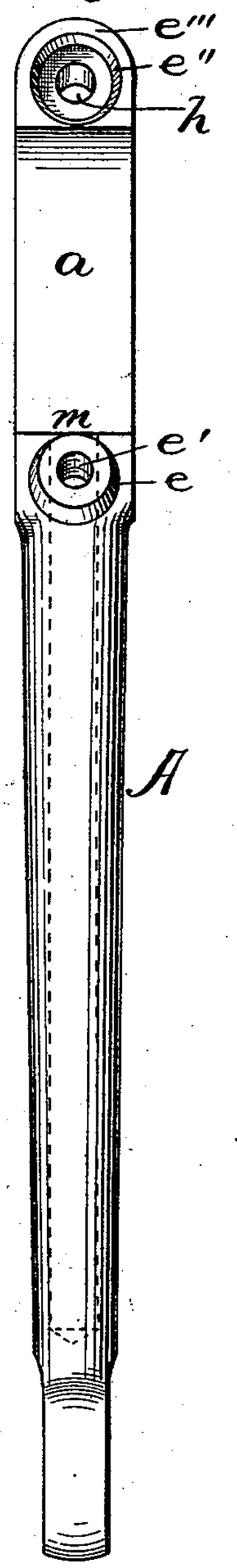
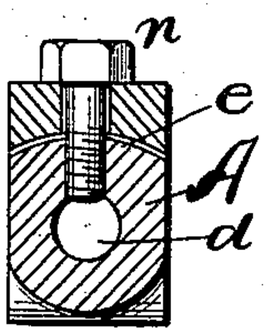


Fig. 7.



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UNITED STATES PATENT OFFICE.

CHARLES E. LIPE, OF SYRACUSE, NEW YORK.

PEDAL-CRANK.

SPECIFICATION forming part of Letters Patent No. 512,303, dated January 9, 1894.

Application filed January 11, 1893. Serial No. 458,054. (No model.)

To all whom it may concern:

Be it known that I, CHARLES E. LIPE, of Syracuse, in the county of Onondaga, in the State of New York, have invented new and useful Improvements in Pedal-Cranks, of which the following, taken in connection with the accompanying drawings, is a full, clear, and exact description.

My invention relates to velocipedes and particularly to pedal cranks.

My object is to produce pedal cranks by forging or casting a blank; then boring out the body; then bending the arm on one end to produce the eye which receives the pedal shaft, and providing it with means whereby it can be adjusted upon said shaft, the pedal crank, when so manufactured comprising a body, both strengthened and reduced in weight by being bored out internally and having on one end an eye to receive the pedal shaft, and upon the other end an eye to receive the crank-shaft, and provided with means to variably adjust said eye to or upon said shaft, to take up wear and to relieve the adjusting bolt from lateral or longitudinal strain.

My invention consists in the several novel features of construction and operation hereinafter described and which are specifically set forth in the claims hereunto annexed. It is constructed as follows, reference being had to the accompanying drawings, which show two forms of the pedal cranks in the blank, and in the other forms until finished, and in which—

Figure 1, is a vertical longitudinal section of the blank forging, having a single arm, after the body has been bored out. Fig. 2, is a front plan view of said blank, the dotted lines indicating the boring out. Fig. 3, is a like view of a blank, differing a little in detail construction. Fig. 4, is a side elevation, partly sectional of the shaft eye created by bending over the arm shown in Fig. 2, and the pedal shaft secured therein. Fig. 5, is a like view of Fig. 3, so bent over. Fig. 6, is a top plan of either Figs. 1, 4 or 5, complete. Fig. 7, is a transverse section on line *x x*, in Fig. 5.

A, is the body of the pedal crank provided on one end with an eye —*y*— to receive the bolt by which the pedal is thereon mounted, and having on the other end an arm —*a*— or one of two lateral branches —*b*—*c*—, the arm —*a*— in Figs. 1, 2 and 3 being deflected substantially as shown, the whole blank, in either case being preferably a drop forging. The arm —*a*— is deflected out of a right-line in order that the body may be more readily bored out, as at —*d*— to strengthen and stiffen it by making it tubular and to reduce its weight. The body is provided on one side with a boss —*e*—, shown in Fig. 1 as circular and of unequal projection and having sloping sides, in Fig. 4 as circular, its sloping sides of equal projection, and in Figs. 3 and 5 of transversely convex form with one or both sides sloping, and in all instances said boss is provided with a central threaded bolt hole —*e'*—.

The arm —*a*— adjacent to its extremity and upon its inner face is provided with a recess —*e''*— having a wall —*e'''*— sloping or straight, to fit upon the wall of the boss —*e*— and extending partially or wholly around the recess; said boss and recess being struck up in the forging, the recess in Figs. 3 and 5 being concave according to the convexity of the boss. Said arm is also provided with a bolt-hole —*h*—, not threaded, through the center of the recess, and —*h'*— is a bolt or set-screw inserted through it, after said arm is bent over, into the bolt-hole in the boss.

The end of the body is forged flat, so that when the arm is bent over, it will create a table —*m*— extending on the line of a cord across the circle of the arm created by bending the arm, and the pedal shaft —*m'*— being flattened on one side to fit upon said table, so that said pedal cannot rotate upon said shaft.

In the construction shown in Figs. 8, 9 and 10 the body is constructed, bored out and provided with a table, the same as in the other form, and the arms —*b*—*c*— are provided with bolt holes, one of which is threaded; and —*n*— is a bolt or set-screw inserted through the same, when the arms are bent inwardly toward each other as shown in Fig. 10.

It will be readily seen that the tension of the grip of the arm or arms, can be varied by adjusting the set-screw; that the boss and recess co-operate to relieve the set-screw from strain or all shearing tendency; and that in their normal position the face of the boss and

the bottom of the recess or concavity should be slightly out of contact, so that space is left for adjustment, and for the "draw" of the sloping wall of the recess upon the like wall of the boss, when the set-screw is tightened.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. A pedal crank comprising a body, an arm thereon, a boss upon said body and a recess upon said arm adapted to receive said boss when the arm is bent over, and means for securing said arm to said body.

2. A pedal crank comprising a body bored out for part of its length, an arm thereon, a boss upon said body and a recess upon said arm adapted to receive said boss when the arm is bent over, and means for securing said arm to said body.

In witness whereof I have hereunto set my hand this 28th day of December, 1892.

CHARLES E. LIPE.

In presence of—

C. B. KINNE,

HOWARD P. DENISON.