

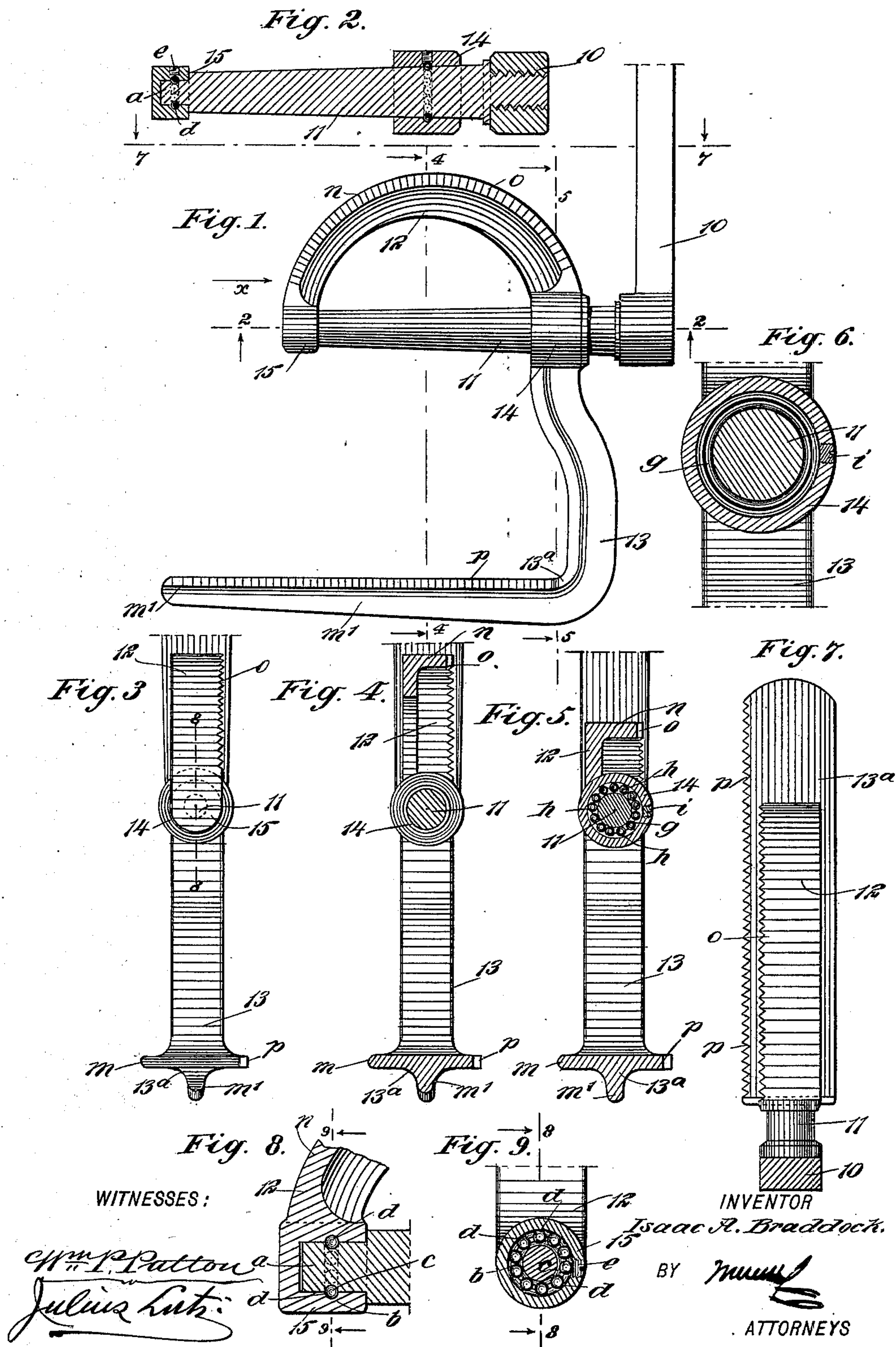
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I. A. BRADDOCK.
BICYCLE PEDAL.

(Application filed Aug. 13, 1900.)

(No Model.)



UNITED STATES PATENT OFFICE.

ISAAC A. BRADDOCK, OF HADDONFIELD, NEW JERSEY.

BICYCLE-PEDAL.

SPECIFICATION forming part of Letters Patent No. 672,698, dated April 23, 1901.

Application filed August 13, 1900. Serial No. 26,717. (No model.)

To all whom it may concern:

Be it known that I, ISAAC A. BRADDOCK, a citizen of the United States, and a resident of Haddonfield, in the county of Camden and State of New Jersey, have invented a new and Improved Bicycle-Pedal, of which the following is a full, clear, and exact description.

This invention has for its object to provide a novel pedal for velocipedes or bicycles which will embody the advantages of a depending swinging pedal and also of a rocking pedal, technically known as the "rat-trap" pedal.

The invention consists in the novel construction and combination of parts, as is hereinafter described, and defined in the appended claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures.

Figure 1 is a rear view of a pedal embodying my invention mounted upon a crank-arm and crank-pin. Fig. 2 is a transverse sectional view substantially on the line 2 2 in Fig. 1. Fig. 3 is a front edge view seen in direction of the arrow *x* in Fig. 1. Fig. 4 is a vertical transverse sectional view substantially on the line 4 4 in Fig. 1. Fig. 5 is a similar view on the line 5 5 in Fig. 1. Fig. 6 is an enlarged transverse sectional view taken partially on the line 5 5 in Fig. 1, showing the raceway of a ball-bearing between a box on the pedal-frame and the pin of the crank-arm whereon said pedal-frame is mounted. Fig. 7 is a plan view of the improvement and a transverse sectional view of the crank-arm, taken substantially on the line 7 7 in Fig. 1. Fig. 8 is a partial enlarged longitudinal sectional view showing the ball-bearing connection of the pedal-frame with the outer end of the crank-pin, taken substantially on the line 8 8 in Figs. 3 and 9; and Fig. 9 is a vertical transverse sectional view substantially on the line 9 9 in Fig. 8.

In the drawings, which show the construction and application of the invention, 10 indicates a bicycle crank-arm of the usual form, and 11 a crank-pin thereon, which projects at a right angle outwardly from the crank-arm, as is clearly shown in Fig. 1.

The improved pedal comprises a metal

frame having an arched member 12 and a substantially L-shaped member 13 13^a, these portions of said frame being integrally joined together by the wall of a ball-bearing box 14. Another bearing-box 15 is formed on the free end of the arched member 12, directly opposite the box 14, so that said boxes are axially alined.

The crank-pin 11 may be tapered a suitable degree, as shown, and at the outer end of the same a diametrically-reduced journal-bearing *a* is formed.

The box 15, which is the outer heel of the arch-piece 12, has a cylindrical socket formed therein at the inner side, and the socket is of such relative diameter as adapts it to neatly receive the journal-bearing *a*. At a suitable point within the socket of the box 15 an annular groove *b* is formed in the cylindric wall thereof, and a mating groove *c* is formed in the periphery of the journal-bearing *a* at a point which will dispose it opposite the groove *b*, thereby affording an annular raceway for reception of the series of bearing-balls *d*. A perforation is formed in the side wall of the box 15, opposite the raceway *b c*, of sufficient diameter to permit the introduction of the bearing-balls *d* into said raceway through the perforation, and the latter is threaded for reception of a short threaded plug *e*, which serves to close the perforation and prevent escape of the balls from the raceway.

The box 14 has a bore formed therein of such diameter as will adapt said box to loosely receive the body of the crank-pin 11. An annular raceway *g* is formed in the box 14, consisting of a groove in the side wall of the bore and an opposite groove in the peripheral surface of the crank-pin 11, these registering grooves together forming the raceway, having a proper diameter and form in cross-section to adapt the raceway for the reception of a series of bearing-balls *h*. (See Figs. 5 and 6.) The side of the box 14 is perforated, and said perforation is threaded to receive a plug *i*, the diameter of the perforation being sufficient to freely admit the passage of the balls *h* therethrough into the raceway *g*.

As the balls *d* and *h* are held in the raceways of the boxes 14 and 15, which are partly formed in the walls of said boxes and partly

in the crank-pin 11, it will be evident that said balls serve as keepers for the retention of the pedal-frame on said crank-pin and at the same time afford antifriction-bearings between said boxes and the crank-pin.

The arched member 12 is of sufficient size to afford a reliable tread for the forward portion of a rider's foot, and the L-shaped member that extends in the same plane with the member 12 is preferably shaped as shown in Fig. 1, comprising an arm 13 extended downwardly, then bent outwardly and downwardly, and at the lower end bent laterally to merge into the footpiece 13^a. The arm 13 may have a webbed form to render it light and strong, as indicated in Fig. 1, and the footpiece 13^a may with advantage comprise a flat top member having parallel side edges and reinforced by a depending integral web, as shown at *m m'* in Figs. 3, 4, and 5.

A flange *n* is preferably formed at one side of the member 12 and coincident with the peripheral surface thereof on the outer face of the flange, as shown in Figs. 4 and 5. The edge of the flange *n* may with advantage be furnished with serrations *o*, extending around the same, as indicated in Figs. 1 and 7, and a corresponding edge of the footpiece 13^a has similar serrations *p*, so that when the complete pedal-frame is rocked into a horizontal position the serrations *o p* will afford a rat-trap formation for the upper side of the pedal-frame and a reliable tread for the foot of the user.

Normally the weight of the L-shaped member comprising the arm 13 and footpiece 13^a will dispose the pedal-frame in an upright position on the crank-pin 11, and it will be seen that the rider of a bicycle having the improvement may readily engage his feet with the like footpieces of duplicate treadles thereon and use the pedals as extensions for length of the crank-arms 10, whereon said pedals are hung.

In the use of the improvement it will be found advantageous to resort to the swinging footpiece 13^a when the road-bed is uneven, very muddy, or obstructed by loose sand and also when the bicycle is run on an upgrade, as the increased leverage afforded by the swinging members of the pedals will lessen the labor and enable the rider to propel the

machine more easily than he can with the device employed as a rat-trap or rocking pedal.

On a good road-bed that is measurably level the rat-trap combination for the improved pedal may be utilized, and it is also of advantage to use the rocking adjustment of the improved pedal in mounting the bicycle or in riding on a path that is close to fences or other obstructions at the sides of the same.

When the swinging pedal is used, it will be seen that the projection of the rider's feet beneath the crank-pins 11 adapts the latter to serve as top guards, preventing the displacement of the feet and dispensing with the need of toe-clips. Furthermore, the opening at the outer side of the swing-piece on each pedal enables the rider to safely dismount at any time, as he can slip his feet sidewise from the footpieces 13^a, and thus release them, which is impossible if a stirrup-shaped pendant pedal is employed.

From the foregoing it will be seen that the improved pedal affords all the advantages combined of a rat-trap pedal and of a stirrup-shaped swinging pedal without the defects of the latter.

It is claimed that the improved pedal may be constructed cheaply, is light and strong, and also is of shapely design.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. A pedal, comprising two alining boxes, an arched frame member engaging at its ends with said boxes, and an L-shaped member extended from one of said boxes in the same plane with the arched member.

2. A pedal, comprising an arched member, boxes at the ends of said arched member, and an L-shaped member extended from one of said boxes in the same plane with the arched member, each of said members having a lateral flange adapted to together afford a tread for the pedal.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

ISAAC A. BRADDOCK.

Witnesses:

WM. R. BOGGS,

M. LILLIAN PETTIBONE.