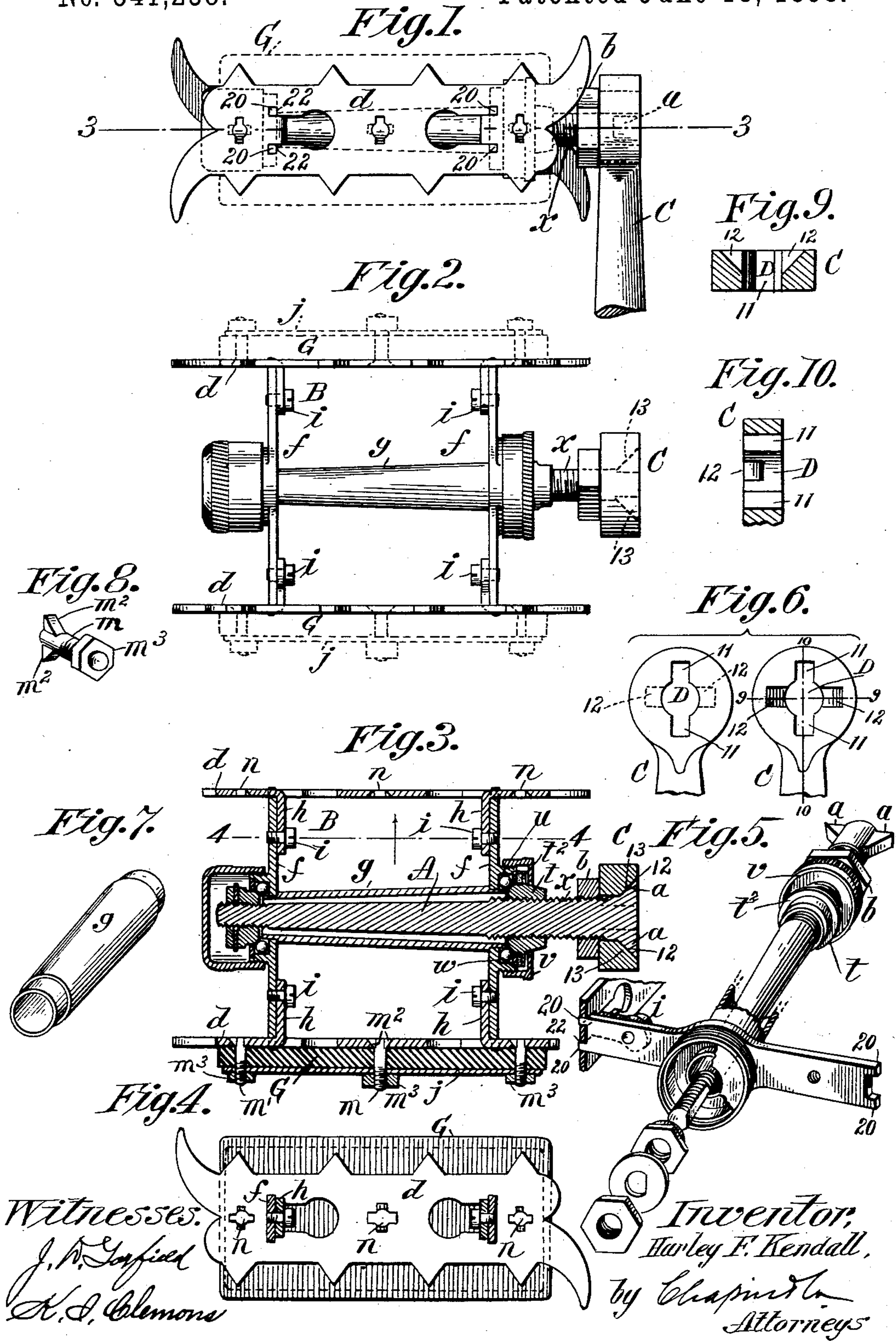


(No Model.)

H. F. KENDALL.  
PEDAL FOR BICYCLES.

No. 541,238.

Patented June 18, 1895.





# UNITED STATES PATENT OFFICE.

HARLEY F. KENDALL, OF SPRINGFIELD, MASSACHUSETTS.

## PEDAL FOR BICYCLES.

SPECIFICATION forming part of Letters Patent No. 541,238, dated June 18, 1895.

Application filed March 26, 1895. Serial No. 543,197. (No model.)

*To all whom it may concern:*

Be it known that I, HARLEY F. KENDALL, a citizen of the United States of America, residing at Springfield, in the county of Hampden and State of Massachusetts, have invented new and useful Improvements in Pedals for Bicycles, of which the following is a specification.

This invention for improvements in bicycle pedals more particularly pertains to improvements in the means of connection of the pedal-shaft with the crank, and in the means of connection of the foot-bearing blades of the pedal-frame with the arms which at their extremities support the blades; and the invention consists in the constructions and combinations of parts all substantially as will hereinafter fully appear and be set forth in the claims.

Reference is to be had to the accompanying drawings, in which—

Figure 1 is a side view of the pedal and a portion of the crank to which it is attached. Fig. 2 is a plan view, the detachable rubbers and the confining devices therefor being indicated by a dotted line. Fig. 3 is a central horizontal sectional view taken on line 3 3, Fig. 1, one of the detachable rubbers and the confining means therefor being here positively shown. Fig. 4 is an elevation and sectional view as taken on the line 4 4, Fig. 3. Fig. 5 is a perspective view showing the pedal-shaft and various other parts to be hereinafter more particularly referred to. Fig. 6 is an illustration of the inner and outer faces of the end of the crank. Fig. 7 is a perspective view of the sleeve or tubular center of the pedal-frame. Fig. 8 is a perspective view of one of the fastenings for the rubber. Figs. 9 and 10 are sections in detail transversely through the end of the crank on the lines 9 9 and 10 10, Fig. 6.

In the drawings, A represents the pedal-shaft, B represents the pedal-frame and C represents the crank. The crank has the cruciform opening, D, two of the wings, 11, 11, of which extend straight through the crank from face to face, while the two wings, 12, 12, which are at right angles to those, 11, 11, extend only partially through the thickness of the crank, their bases constituting solid seats, 13, 13.

These bases are preferably inwardly beveled. The pedal-shaft has its end of attachment formed with the radial lugs, *a, a*, the width of which corresponds to that of the said several wings, 11, 12, of the opening, D. The pedal-shaft is, inside of its lug-provided end, screw-threaded and receives thereon the nut, *b*. By screwing the said nut inwardly, sufficiently, the pedal-shaft may be slipped through and to have its lugs outwardly beyond the outer face of the crank. The shaft may now be turned a quarter way round and brought to have its lugs register with and drawn within the said non penetrating wing-sockets, 12, 12. Now by setting up the nut hard against the inner face of the crank, the lugs, *a, a*, are crowded hard, firmly and securely within the wing-sockets, 12, 12, therefore. Thus there is no protruding nut beyond the face of the crank and when the pedal is removed from the crank (as it may be by inwardly turning the nut on the pedal-shaft sufficiently far) the nut is not detached, and there is no liability of its becoming lost.

The pedal-frame embodies the opposite foot-bearing blades, *d, d*, and the transverse arms, *f, f*, to the ends of which the said arms are connected and which are intermediately constructed with the ball-cases as usual, and this frame also preferably comprises the tube, *g*, on the reduced ends of which the parts, *f, f*, are closely fitted. The foot-bearing blades, *d, d*, have the lips, *h, h*, struck up from portions of the blades within their edges, these lips standing inwardly at right angles to the length of the blade. The extremities of the arms, *f, f*, overlap these ears and are held by the screws, *i*. Bolts with nuts might be used, but the screws as shown are deemed preferable.

In order to impart additional stiffness to the connection between the blades, *d*, and arms, *f*, the ends of the arms are formed with the separated tenons, 20, 20, (see Figs. 1 and 5,) which loosely enter the mortises, 22, therefore in the blades. The aforesaid set screws, *i, i*, constitute the entire connections for the said parts, *d* and *f*, the necessity of upsetting or riveting the ends of the tenons being obviated. Therefore, when it becomes desirable to remove a blade, in the event of breakage,



distortion, damage, and for the purpose of repairing the pedal or sharpening the points, it is only necessary to remove the screws, *i*.

It will be perceived from the illustrations that a combination pedal is provided whereby, at pleasure, the rider may have a rat-trap or a rubber pedal.

The rubbers, *G*, consist of flat bars having a width greater than that of the blades or in any event sufficient to extend beyond the edge or edges of the blades, and the rubbers are held firmly to the blades, at the outer side thereof, by the metallic clamp-strips, *j*. The rubbers and clamping strips are connected by means of the bolts, *m*, having the lateral extending lugs, *m*<sup>2</sup>, *m*<sup>2</sup>, one or more, the nuts, *m*<sup>3</sup>, and the provision of the openings, *n*, through the pedal-blades which are practically identical so far as their form is concerned with those hereinbefore particularly described as being provided in and through the attaching ends of the crank. The nuts are applied at the outer ends of the bolts. By unscrewing the nut sufficiently far,—not necessarily removing them from the bolts,—the bolts may be pushed endwise inward so that the lugs, *m*<sup>2</sup>, clear the non-penetrating socket-wings in which they had been seated, permitting the bolts to be given a quarter turn, whereupon the bolts, rubbers, and clamping strips may be all bodily removed from the pedal and without disconnection of the last enumerated parts.

In this pedal, I have provided at the inner bearing (as well as the outer bearing) a cone, *t*, which is formed separately from the pedal-shaft and is adjustable longitudinally thereon by reason of its screw-engagement with the threaded portion, *x*, at the extremity of the shaft, which is adjacent the crank. The same screw-threads may be continued, from the place where the nut, *b*, is set up, to within the bearings. This cone has outside of the ball-race the outlying flange, *t*<sup>2</sup>. The ball-races are surrounded and in part constituted by, the endwise projecting hub, *u*, which is brought integrally with the pedal-frame and this is externally screw-threaded and receives the

dust-cap, *v*, which has its outer end wall or head centrally and circularly apertured to surround with closeness, and yet without obstructing the free rotation of the pedal, the cone. This end-wall or head of the dust-cap lies alongside, but not in hard frictional contact on, the aforesaid flange, *t*<sup>2</sup>, of the cone and renders the bearing more effectually dust-proof than would be the case in the absence of the said flange, *t*<sup>2</sup>. The balls are retained in the race by the washer, *w*, which is seated at the mouth of the race. This washer protrudes inwardly over the balls so far as to leave a space between its inner edge and the inner boundary of the ball-race which is of less width than the diameter of the balls. When the pedal-frame is removed from the shaft, the balls are retained against dropping out of the race by the washer. The washer may be removed by the use of a knife or otherwise.

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

1. In a crank and pedal for bicycles, the combination with the pedal-shaft having at its end one or more laterally extending lugs and screw-threaded within such end of the crank having the transverse opening with the penetrating and non-penetrating wings, and the nut screwing on the shaft and against the inner face of the crank, substantially as and for the purpose set forth.

2. In a pedal, the combination with the foot-bearing blades, *d*, each having the inwardly extending ears, *h*, *h*, struck up from internal portions of the blade and also having the adjacent mortises, *22*, of the supporting arms, *f*, *f*, having the tenons at their ends entering said mortises, the extremities of the said arms overlapping said ears, and the set-screws, *i*, *i*, confining the ears and arms, substantially as described.

HARLEY F. KENDALL.

Witnesses:

WM. S. BELLOWS,  
K. I. CLEMONS.