

(No Model.)

E. L. SHULTZ.
PEDAL FOR VELOCIPEDES.

No. 506,276.

Patented Oct. 10, 1893.

Fig. 1.

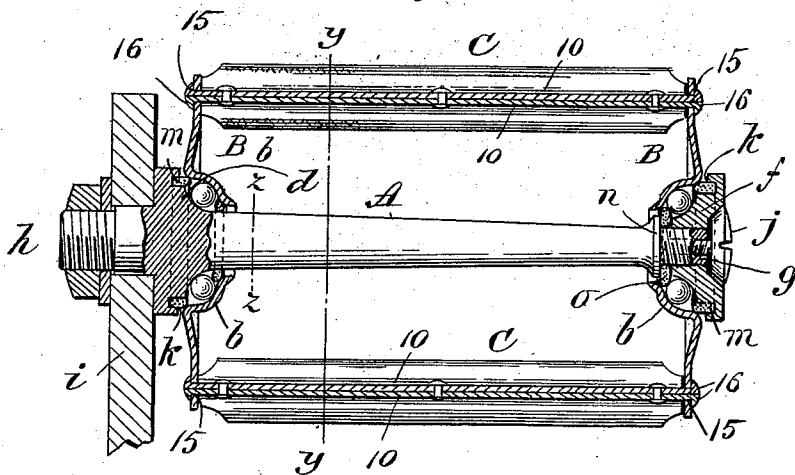


Fig. 2.

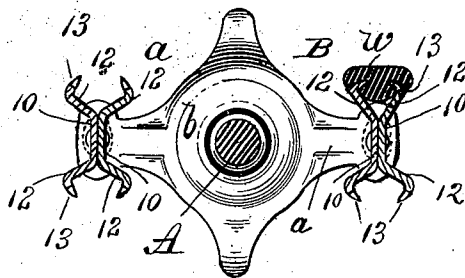


Fig. 3.

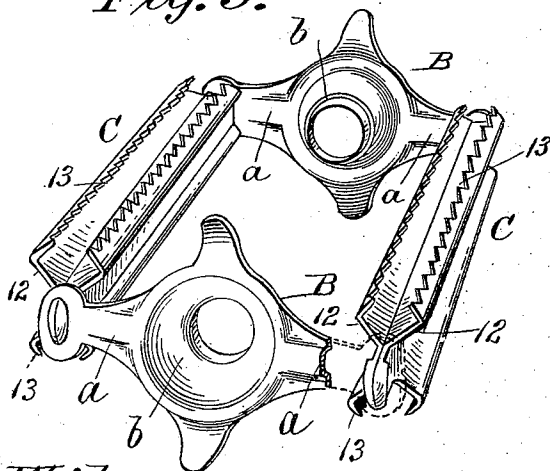


Fig. 4.

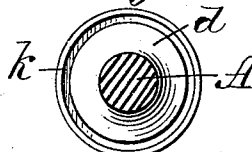
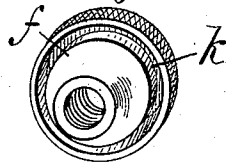


Fig. 5.



Witnesses:

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PEDAL FOR VELOCIPEDES.

SPECIFICATION forming part of Letters Patent No. 506,276, dated October 10, 1893.

Application filed August 29, 1892. Serial No. 444,354. (No model.)

To all whom it may concern:

Be it known that I, EDWARD L. SHULTZ, a citizen of Poland and a subject of the Czar of Russia, residing at Springfield, in the county of Hampden and State of Massachusetts, have invented new and useful Improvements in Pedals for Velocipedes, of which the following is a specification.

This invention relates to pedals for velocipedes, the purpose being to improve the construction of the pedal, in various respects, especially as regards the bearings between the pedal-shaft and pedal-frame, and the construction of the pedal-frame. The advantages aimed at are the production of a pedal which is capable of construction at very small cost and one in which the bearings are simple and at the same time entirely efficient.

To these ends the invention consists in the formations 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 the improved pedal is illustrated, wherein—

Figure 1 is a longitudinal sectional view of the pedal. Fig. 2 is a cross section on line $y-y$, Fig. 1. The line $x-x$, on Fig. 2, indicates the plane on which the sectional view, Fig. 1, is taken. Fig. 3 is a perspective view of the pedal frame. Fig. 4 is a cross section of the pedal-shaft or axle on the line $z-z$, Fig. 1. Fig. 5 is a perspective view of the adjusting cone.

In the drawings A represents the pedal shaft or axle.

B, B, represent the end plates of the pedal frame, C, C, being the tread-bars thereof.

Each of the plates, B, of the pedal frame is formed of a sheet of thin plate of metal struck up with strengthening corrugations or ribs, as seen at a , having the enlarged intermediate portions of cup-form, as seen at b , and centrally apertured for the passage thereto of the pedal shaft. The outwardly facing surfaces of the cupped portions, b , constitute curved or inclined bearing walls for the balls of the ball-bearings, the opposing surfaces for the bearings being constituted, at one end of the pedal by the inclined peripheral surface of the conical enlargement, d , of the pedal-

shaft, and at the other end of the pedal by the conical formed collar, f , which screws upon the necked-down and externally threaded end portion, g , of the pedal-shaft. The inner end of the shaft is shouldered and screw-threaded, for instance as indicated at h , for the connection thereof of the crank, i , although, of course, the crank connection may be made in any manner desired. The adjusting cone, j , is of such a dimension axially that, on being screwed upon the extremity, g , of the shaft, it comes to bearing against the balls before its outer face can be brought flush with the end of the shaft. Said extremity, g , is axially bored, and tapped the reverse of the external threads, receiving the correspondingly screw-threaded shank of the set screw, k . Therefore if the external threads are right handed and the internal threads left handed, the set screw will with greater certainty retain the cone in its adjustment, and any loosening and turning thereof which might possibly occur cannot induce a loosening of the reversely threaded set screw. The sleeve, l , is countersunk at its outer end for the reception of the head of the set screw. The conical enlargement, d , of the shaft and the adjusting cone both have within their inner surfaces, which face toward the opposing bearing surfaces of the cup portions, b , of the pedal end-plates, the annular grooves, m , and receive therein the rings, n , of felt or other soft or compressible material which protrude slightly beyond the inclined faces of said parts, f , and d , and render the bearings more nearly dust proof. It will be noticed that the shaft, just within the threaded extremity, g , has the shoulder, n , which lies within the inner orifice of the cup-formed portion of the end-plate and that there is a collar, o , of felt or analogous material surrounding the shaft extremity, g , and lying against and extending beyond the edge of the shoulder effectually closing the inner opening to the bearing. The said rings, m , n , and the one, o , in addition to serving as dust-checks may, by being absorbent, be also utilized as holders for lubricant.

Each of the tread-bars, C, is formed by two sheet-metal plates each of which is struck up into trough or channel form, the bases or mid-

dle sections, 10, 10, being formed flat and laid the one against the other, the sides, 12, 12, of the one channel plate spreading from those of the other, said bases, 10, 10, being firmly united by riveing, and the extreme edge portions, 13, 13, of the plates being turned angularly to said portions, 12, 12, and preferably serrated. The said base portions, 10, 10, are extended endwise slightly farther than the angularly turned sides, 12, 12, and are passed through slots, 15, therefor, in the end plates and their extremities overturned, as seen at 16, against the outer side of the end plates in the manner of riveting, rendering the connection of all of the parts of the pedal frame strong, firm, and rigid without the employment of brazing or solder and conducing to the production of the pedal frame at remarkably small cost; all of said portions are formed by striking up and punching and requiring little or no machine work or finishing. The edge extremities, 13, 13, of the plates may have inclinations inwardly toward the median plane coincident with the rivet united middle portions, 10, 10, for the better retention of the bars of rubber which may directly constitute the treads of the pedal as indicated at *w*, in Fig. 2, or the pedal may be of substantially the construction set forth minus said rubber bars such constituting a very desirable pedal of the rat-trap type. For the latter, however, it is not essential that the serrated edge portions, 13, shall stand inclining the one toward the other for they may be more or less nearly parallel with each other.

I claim—

1. The combination with a pedal frame having at one end an apertured, cup-formed por-

ion, of the pedal-shaft having the shoulder, *n*, at a short distance from its end and the screw-threaded extremity, *g*, the adjusting conical collar screw-engaging said extremity, the balls, and a ring, *o*, surrounding said shaft extremity and lying against, and extending beyond the edge of, said shoulder, substantially as and for the purpose set forth.

2. The combination with a pedal-frame having at one end an apertured, cup-formed portion, *b*, of the pedal-shaft having the shoulder, *n*, at a short distance from its end the screw-threaded extremity, *g*, a collar adapted to screw-engage said threaded portion, having a conical bearing portion and having outside thereof the annular channel, *k*, the balls, the ring, *m*, set in and protruding beyond the mouth of said channel and the ring, *o*, surrounding said shaft extremity and lying against, and extending beyond the edge of, said shoulder, substantially as described.

3. A pedal-frame consisting of a pair of end-plates with apertures near the ends thereof, and a pair of tread-bars each formed of two thin plates having their middle portions placed with their faces together and riveted, and the side portions thereof angularly turned and spread the one from the other, and said middle portions having the endwise tongues or extensions which are passed through the apertures of the end-plates and upset against the outer sides of the latter, substantially as described.

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Witnesses:

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