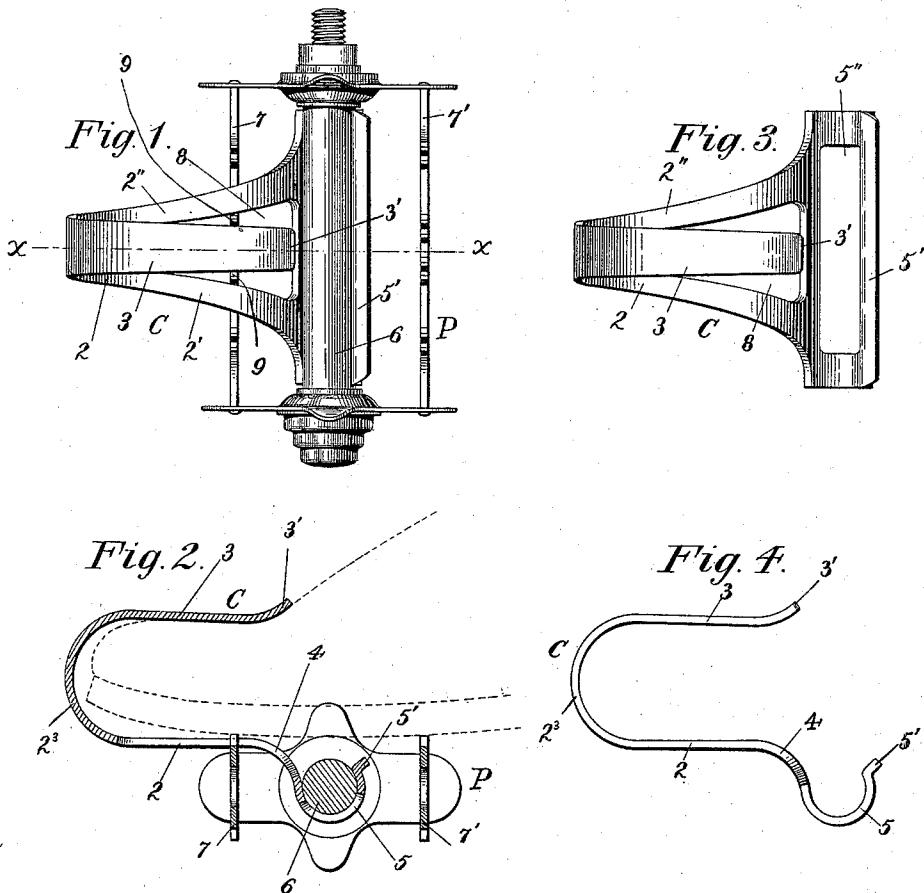


(No Model.)

H. W. LESTER.  
TOE CLIP FOR VELOCIPEDe PEDALS.

No. 535,065.

Patented Mar. 5, 1895.



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# UNITED STATES PATENT OFFICE.

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## TOE-CLIP FOR VELOCIPEDe-PEDALS.

SPECIFICATION forming part of Letters Patent No. 535,065, dated March 5, 1895.

Application filed August 31, 1894. Serial No. 521,816. (No model.)

*To all whom it may concern:*

Be it known that I, HOWARD W. LESTER, a citizen of the United States, residing at East Hartford, in the county of Hartford and State of Connecticut, have invented certain new and useful Improvements in Toe-Clips for Velocipede-Pedals, of which the following is a specification.

This invention relates to toe-clips for velocipede-pedals and especially for bicycle-pedals; the object being to furnish an improved device of this general character which shall be readily attachable or detachable; shall be capable of maintaining its position at all points of the revolution of the pedal independently of the pressure exerted upon it by the rider, and also in connection with such pressure, and without auxiliary securing-devices; and which may be capable of manufacture as 20 a unitary structure, and hence at a corresponding low cost.

In the drawings accompanying and forming part of this specification, Figure 1 is a plan of a toe-clip embodying my invention and in operative relation to a bicycle-pedal. Fig. 2 is a transverse section in line  $x-x$ , Fig. 1. Fig. 3 is a plan of the toe-clip detached. Fig. 4 is a side elevation of the same.

Similar characters designate like parts in all of the figures.

My present invention comprises, in combination with a velocipede pedal having a longitudinal connecting-member or pedal-bar formed with substantially transverse notches, 35 of a sheet-metal toe-clip comprising a rear transversely-disposed resilient clip having continuous parallel longitudinal members adapted for engagement with opposite sides of the pedal-pin or pedal-carrier, and also having substantially semi-circular portions connecting these longitudinal members and engaging the under side of the pedal-pin, whereby the toe-clip is positively held at its rear end against lateral and torsional movements relatively to the pedal-pin; and a longitudinally-disposed resilient clip extending forward of and overlying the aforesaid transversely-disposed clip, and having a toe-engaging portion in which the under side is bifurcated to form 40 two converging members connected at their forward ends and fulcrumed directly upon the

longitudinal connecting-member of the pedal and adapted to receive the thrust of the pedal forward of this fulcrum, the longitudinally-disposed clip also having these converging members so disposed that they will lie in the notches of and below the upper side of the longitudinal connecting-member of the pedal and will be engaged by the walls of said notches, all of which will be hereinafter more 55 fully described.

C designates in a general way a toe-clip constructed in accordance with my invention, the clip being shown in Figs. 1 and 2 in operative position upon an open or "rat-trap" pedal. 65 In these views the clip is shown as formed of sheet material, preferably of thin sheet steel of uniform thickness, from which the clip is stamped in the form of a blank, and then properly shaped to form the completed article illustrated in said figures.

In its finished form, shown therein, the clip comprises two main portions, a forward longitudinally-disposed clip or member of large size for engaging the toe of the rider's shoe, 75 and a smaller, transversely-disposed clip or member ranging below the plane of the horizontally-disposed clip, and adapted for embracing the pedal-pin or carrier of the pedal.

The toe-clip proper, which embraces the 80 shoe of the rider, is formed of a lower, substantially-horizontally-disposed portion, 2, which, at its forward end, is bent substantially semi-circularly, as shown at  $2^3$ , to form a stop or abutment for limiting the forward movement 85 of the foot when in position upon the pedal, said curved portion being bent backward upon itself as shown at 3, to form a clamping-plate of resilient character, for engaging the upper side of the shoe or foot-gear of the 90 cyclist. This rearwardly-disposed portion 3 is shown herein as bent backward at a slight inclination to the plane of the lower member or sole-piece 2 of the forward portion of the clip, in order to obtain a stronger clamping 95 action upon the toe of the shoe engaged thereby, and at its extreme rear end said member is shown as formed with the upwardly-ranging lip 3', which is in position and adapted, as shown in Fig. 2, for engagement with 100 the cyclist's shoe at the lower portion of the instep thereof.

The second member of the device, viz., the transversely-disposed smaller clip, for engaging the pedal-pin or carrier, is shown herein as lying wholly beneath the plane of the 5 lower portion or under side of the forward or toe-engaging clip, and is formed by bending down the rear, enlarged end of the member 2 at about the point 4, and so shaping that portion of the blank in the rear of said point 10 4 as to form a clip, 5, the length of which is approximately the distance between the inner sides of the pedal-bearings, and the contour of which conforms substantially to that of the pedal-pin or carrier 6 of the pedal, designated herein in a general way by P. It will, of course, be understood that this carrier-engaging clip 5 is so formed as to be of slightly less diameter, transversely of its inner or journal surface, than the diameter of 15 the pedal-pin 6, in order that said clip may be sprung upon said pedal-pin or carrier and be clamped firmly thereon against accidental displacement, during revolution of the pedal or when the forward shoe-engaging clip is 20 not engaged by the shoe of the rider. At its extreme rear edge the carrier-engaging clip 5 is shown herein as formed with an upwardly turned bead or lip, 5', which is adapted to be engaged, as by the thumb of the rider, when 25 30 the toe-clip is to be attached to or detached from the pedal-pin.

I have shown the form of clip illustrated herein, as applied to a bicycle-pedal of the racing or "rat-trap" type, having the usual 35 serrated cross-bars or connecting-members, 7 and 7', forming the transverse portions of the frame of the pedal. By reference to Figs. 1 and 2, it will be observed that the under side of the forward or overlying toe-engaging portion of the clip is formed with a longitudinal opening, 8, which is stamped out, to render the clip as light as possible and also for the purpose of forming two narrow, connected portions, 2' and 2'', of the sole-plate or piece 2, the said portions 2' and 2'' being so disposed, 40 relatively to each other, as to lie, when in engagement with the pedal, upon the outer sides or slopes of two of the serrations or teeth, 9, 9, of the cross-bar 7 of the pedal-frame. By so forming said sole-plate portion of the clip, all 45 of the serrations or teeth of said forward cross-bar 7 are permitted to be brought into engagement with the sole of the cyclist's shoe, as shown in Fig. 2, and hence there is no interference of the clip with the functions of the pedal 50 itself. Moreover, by this construction, the sole-plate portion of the clip will be positively held against movement longitudinally of the connecting-bar of the pedal-frame, and, therefore, 55 transversely of the machine upon which the pedal is mounted, so that the toe-clip as a whole is positively held against movement in both longitudinal and lateral directions, the longitudinal hold being obtained by the 60 clip 5, and the transverse hold by the abutment of the side edges of the sole-plate portions of the toe-engaging clip against the

notches in the cross-bar 7. The semi-cylindrical, pedal-pin-engaging member or clip 5 is also shown as formed with a longitudinal 70 opening, 5'', in order to still further lighten the clip as a whole, and thus have only so much weight added to the pedal-structure as may be necessary to obtain the desired result, viz., to maintain the foot of the rider positively in 75 position upon the pedal.

The longitudinal members of the clip 5, it will be observed, are continuous and engage opposite sides of the pedal-pin, and are maintained in engagement with the pedal-pin, and 80 in parallelism with each other, by the semi-cylindrical connecting-bars of said clip 5, which connecting-bars engage with the under side of the pin or carrier so as to positively hold said clip, as a whole, in engagement with 85 the pedal-pin and maintain the toe-clip against both lateral and torsional movements relatively to the pin, and therefore relatively to the pedal itself.

It will be noticed that, by the organization 90 of the several parts of the clip in the manner described herein, a unitary structure is formed, which requires no extraneous fastening devices to maintain it in operative relation with the pedal upon which it is adapted 95 to be secured. The transversely-ranging, smaller clip forms a resilient, contractile member adapted to engage and bind firmly around the pedal-pin and maintain its position thereon without slipping, but also adapted for 100 turning movement thereon, as well as for ready disengagement therefrom. The forwardly-projecting, shoe-clamping clip, it will be observed, has a pivotal point or fulcrum in the line of the cross-bar 7 of the pedal-frame, which fulcrum is close to the load or weight, which is, of course, in the line of the 105 pedal-pin, the fulcrum being somewhat remote from the forward or power-applying end of the main clip or member. Hence the 110 pressure of the foot or thrust of the cyclist upon the pedal, and upon the inner wall 2<sup>3</sup> of the clip, will not tend to loosen the toe-clip, but will wedge it even more tightly upon the 115 pedal-pin or carrier.

It will be noticed that upward pressure by the cyclist is not exerted against the end or lip portion 3' of the clip to any considerable extent, but that such pressure, owing to the pivotal connection of the clip with the pedal-pin, is exerted principally at the upper portion of the inner wall 2<sup>3</sup> and longitudinally of the clip.

My invention comprises a very simple, light and compact means for maintaining the foot 125 of the rider in operative position upon a bicycle—or similar pedal, and one that may be positively maintained in operative position without additional fastening devices, and therefore requiring no particular attention. 130 A further advantage is that, owing to its extreme simplicity and compactness of construction, it may be readily and quickly attached to or detached from the pedal by practically

a single movement, and when so detached and not in use may be carried in the pocket of the rider.

It will be evident that the construction herein shown and described is equally applicable for use with the ordinary solid or rubber pedals, in which case the forward pedal-rubber should preferably be provided with a slightly reduced central portion or portions, at the points where the members 2 and 2" would engage therewith, in order that the full gripping surface of the rubber may engage the sole of the shoe, in the manner similar to that shown and described with reference to Fig. 2.

Having thus described my invention, I claim--

The combination with a velocipede pedal having a longitudinal connecting-member formed with substantially transverse notches, of a sheet-metal toe-clip, comprising a rear transversely-disposed resilient clip having continuous parallel longitudinal members for engaging opposite sides of the pedal-pin or carrier, and substantially semi-circular portions for connecting said longitudinal members and engaging the under side of said pin or carrier, whereby the toe-clip is positively held at its rear end against lateral and tor-

sional movements relatively to said pin or carrier; and a longitudinally-disposed resilient clip extending forward of and overlying said transversely-disposed clip, and having the under side of its toe-engaging portion bifurcated to form two converging members connected at their forward ends and fulcrumed directly upon said longitudinal connecting-member of the pedal and adapted to receive the thrust of the latter forward of said fulcrum, whereby said thrust is transmitted to the transversely-disposed clip to increase the clamping effect of said clip upon said pedal-pin or carrier, and said longitudinally-disposed clip also having said converging members of its toe-engaging portion lying in the notches of and engaged by the walls of said notches of and below the upper side of said longitudinal connecting-member of the pedal upon which member they are fulcrumed, whereby the toe-clip is also positively held against lateral movement at its forward end, substantially as described.

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