

No. 615,679.

Patented Dec. 13, 1898.

H. J. CONDELL.
TOE CLIP FOR BICYCLES.

(Application filed Oct. 8, 1897.)

(No Model.)

Fig. 1.

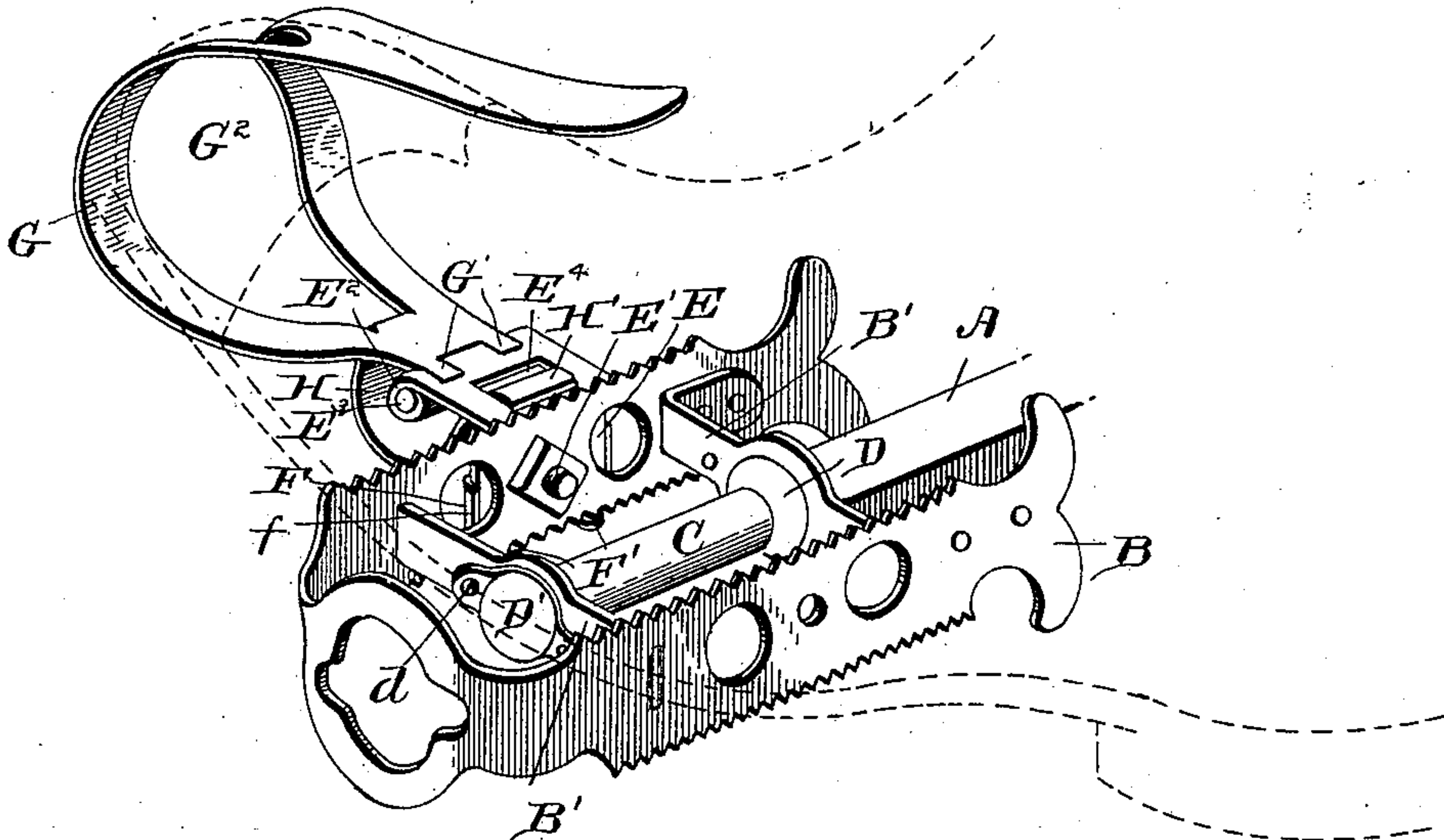


Fig. 2.

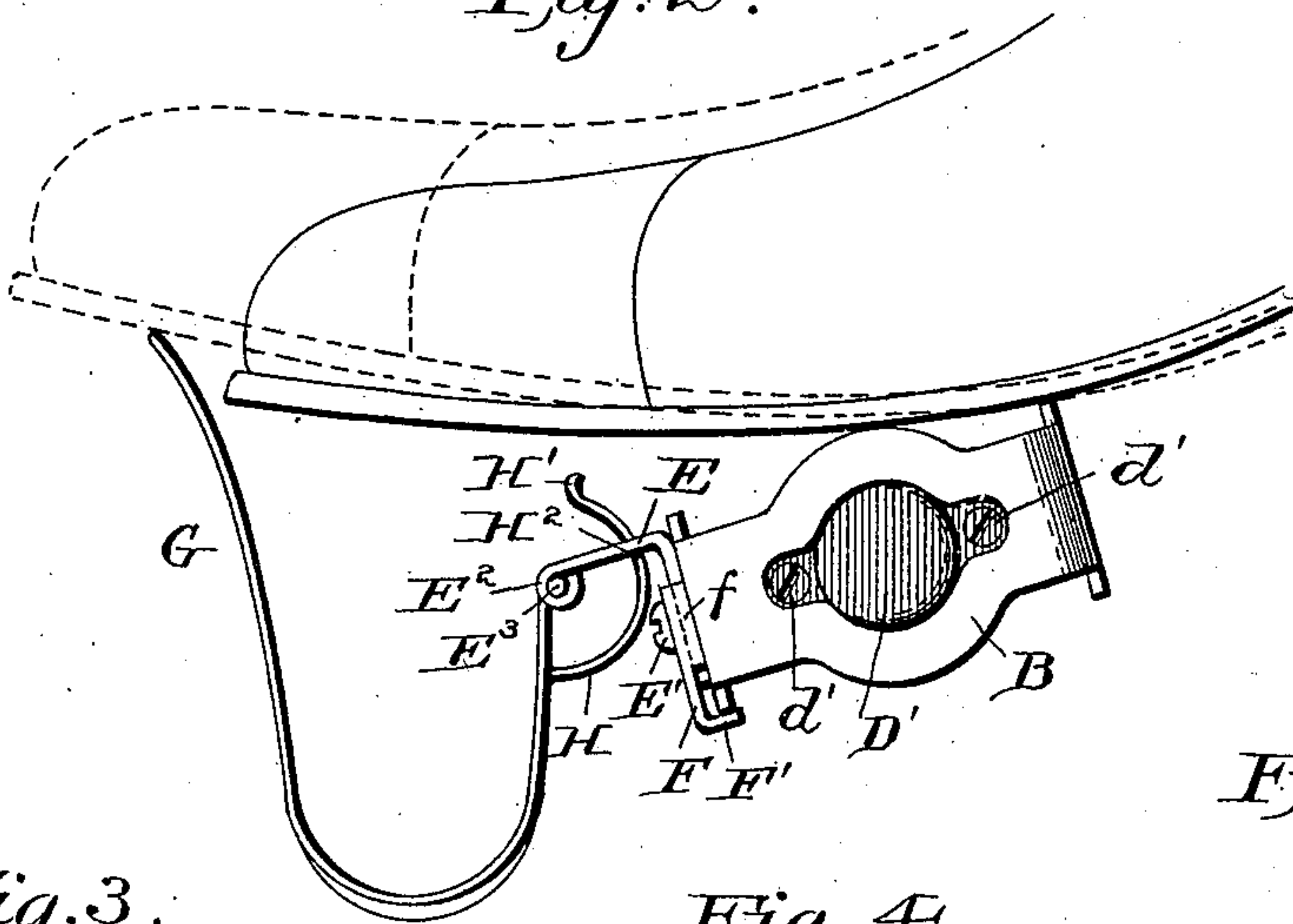


Fig. 3.

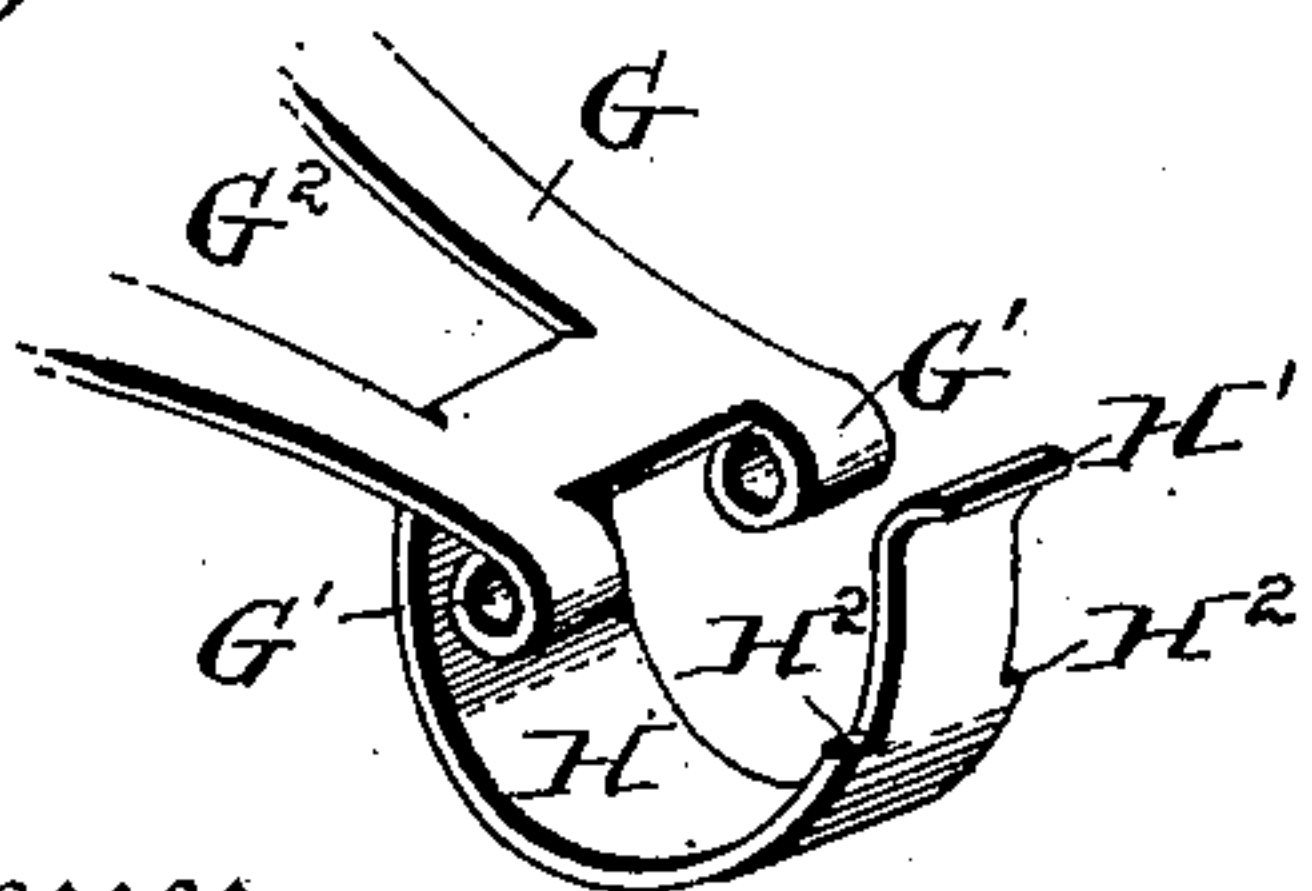


Fig. 4.

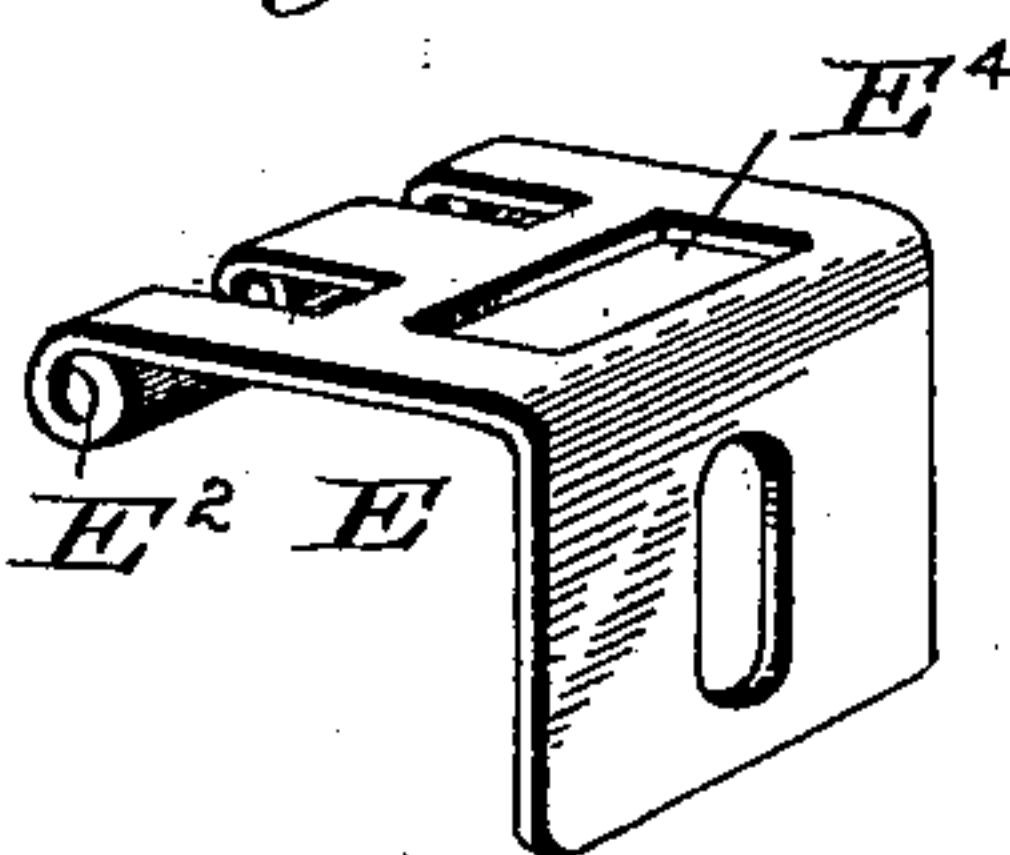
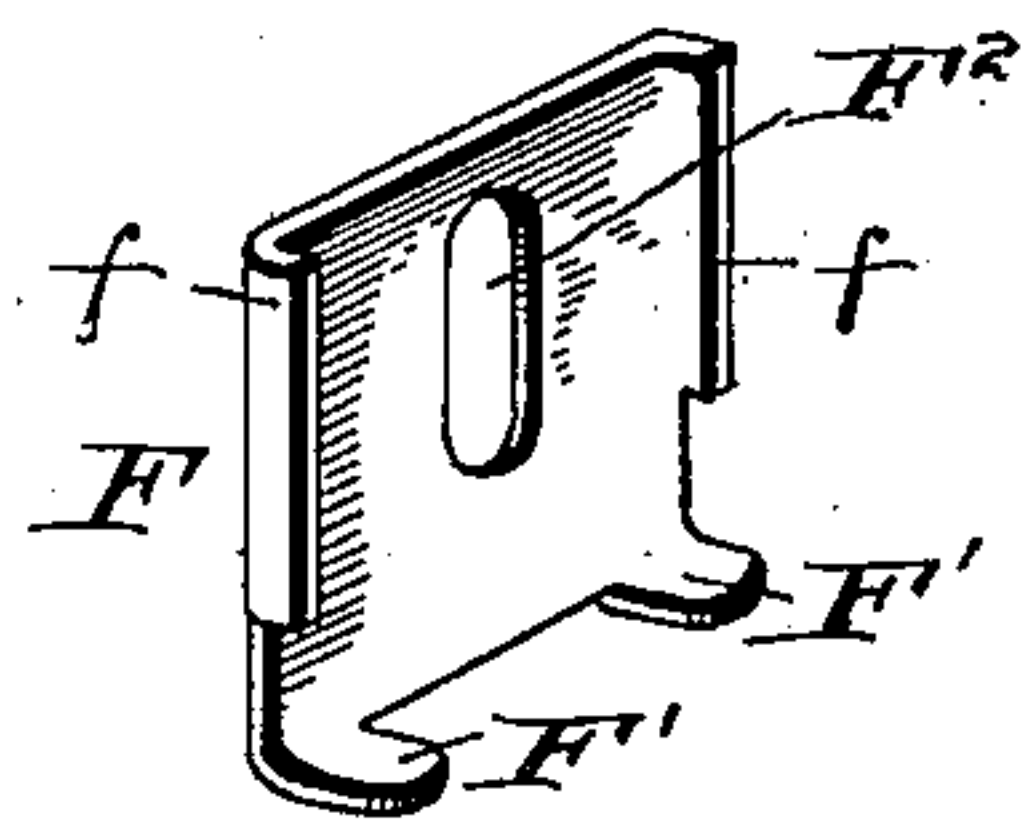


Fig. 5.



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TOE-CLIP FOR BICYCLES.

SPECIFICATION forming part of Letters Patent No. 615,679, dated December 13, 1898.

Application filed October 8, 1897. Serial No. 654,488. (No model.)

To all whom it may concern:

Be it known that I, HENRY J. CONDELL, a citizen of the United States, residing at New York city, in the county of New York and State of New York, have invented certain new and useful Improvements in Toe-Clips for Bicycles; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

The chief object of this invention is to provide a simple automatically-adjusted toe-clip of the hinged or pivoted kind which shall be thrown into proper position over the toes without any risk of causing the foot to slip from the pedal or any need of tilting it into an unusual or inconvenient position, the said clip and its operative arm being located at the front of the pedal and possessing the maximum strength with the minimum weight and complexity.

The invention also has for its further objects to provide more satisfactory means of attachment than those hitherto employed, guarding more effectively against twisting of the clip and generally increasing the reliability and durability of this article.

To these ends my invention consists partly in the combination of a hinged toe-clip with a bicycle-pedal and a support or supporting-plate rigid with the latter, the hinge connecting the said clip to the said support being approximately in the same horizontal plane with the tread-surface of the pedal and the said clip being provided with a rigid lever-arm, which is bent up behind the hinge of the clip into position to be acted on by a slight downward motion of the rider's foot, so as to tilt the body of the clip over on his toes in the usual position.

The said invention also consists in the combination, with the supporting-plate to which the toe-clip is hinged, of the pedal-frame and a clamping-plate having tongues or flanges bent upon a part of the said frame for the purpose of holding the supporting-plate thereto and preventing the toe-clip from turning laterally.

The said invention also consists in the combination of the pedal-frame and a supporting-plate attached thereto with a toe-clip hinged

to the said supporting-plate and provided with a lever-arm having stops formed thereon to prevent the said toe-clip from moving too far in either direction.

The said invention consists, finally, in certain additional features of construction and combination hereinafter more particularly set forth and claimed.

In the accompanying drawings, Figure 1 represents a perspective view of a pedal provided with a toe-clip embodying my invention, the latter being closed on the toes of the rider (shown in dotted lines) in position for propelling the machine. Fig. 2 represents a side elevation of the same, the toe-clip being in its normal position, with the rider's foot (shown in full lines) ready for operating the same to close the said clip on his toes; also, in dotted lines his foot is shown as thrust too far forward and bearing on the tip of the clip. Fig. 3 represents a detail view of the lever-arm, showing the shoulders and recurved tip of the same, which act as stops. Fig. 4 represents a detail view of the support to which the clip is hinged. Fig. 5 represents a detail view of the clamping-plate, hereinafter described.

A designates the pedal shaft or spindle, B the pedal-frame, and C the sleeve clamped to the cross-bars B' of the said frame, all as hitherto known and used. Casings for the ball-bearings are provided, consisting partly of cups D, formed on the ends of the said sleeve, and partly of oppositely-arranged cups D', which are fastened to said cross-bars respectively by screws d. I have not deemed it necessary to show the ball-bearings nor the inclosed journal of the spindle, these parts being of quite ordinary construction and in no way affecting my invention. A supporting-plate E is fastened to the forward side of the said pedal-frame by a bolt E' and consists of a vertical part through which the said bolt passes and a horizontal part bent forward at right angles in approximately the same horizontal plane as the tread of the said pedal. A clamping-plate F, which has its lateral edges f bent around the edges of the said vertical part of the said supporting-plate, is also provided at its bottom edge with lugs or flanges F', that are bent under the said frame. The said clamping-plate has a vertical slot F²

formed therein, which allows the shank of the bolt E' to pass through it and permits the vertical adjustment of the said plate to a pedal-frame of any size. This is an important feature, as their heights vary considerably. I do not, however, claim this feature of adjustment by slot and screw as broadly new, it having been used in toe-clips heretofore.

The supporting-plate E has hinge knuckles or lugs E² formed on the forward end of its horizontal part, in which a transverse pintle E³ is fixed, both the plate and pintle being very slightly below the level of the top or tread of the said pedal-frame. The said plate E has an opening E⁴ formed in it between the said hinge and the said frame for the lever-arm, hereinafter described, to work up through.

G designates the toe-clip, which has on its rear end a pair of knuckles G', turning on the said pintle, so that the said clip is hinged approximately in the same horizontal plane as that of the tread of the said pedal.

H designates the lever-arm of the toe-clip, which is integral therewith, said lever-arm being preferably formed by taking a tongue from the metal blank in cutting the toe-opening G² of the said clip and turning the said tongue reversely up through the opening E⁴, then forward again to a point over the hinge, where its tip H' is slightly recurved, forming a stop which prevents the toe-clip from turning backward too far by its contact with the top of supporting-plate E. On the sides of the said lever-arm H are formed shoulders H², which in like manner prevent the said clip from falling downward and forward too far, since they come in contact with the under side of the said supporting-plate when the said toe-clip has reached its desired open position. This is the normal position of the said clip when not moved by the foot of a rider, so as to overlap his toes and the forward part of his foot. The heavier part of the said clip when in this open position is much nearer the frame than when in position on the foot for use, and its weight therefore exerts much less leverage on the pedal than in the case of ordinary toe-clips. The slant of the pedal is correspondingly lessened when the rider's foot is not on its facilitating the placing of the foot on and in the said pedal and toe-clip. This position is taken automatically by the action of gravity only on the said toe-clip. I am enabled, therefore, to dispense with springs and other extraneous mechanical appliances.

When the rider places his foot on the pedal in the natural way, it takes the position shown in full lines in Fig. 2, with a slight slant upward above the lever-arm H. By depressing the toes the said lever-arm is also depressed

sufficiently to bring the toe-clip over the toes into the position shown in Fig. 1. No backward or withdrawing motion of the foot is required, so that I avoid all risk of the rider losing the pedal thereby.

If by chance the foot is moved too far forward before striking the pedal, so that the toes rest on the tip of the toe-clip, (see dotted lines, Fig. 2,) my construction thereof allows the machine to be operated without hindrance until there is an opportunity to take the proper position within the clip by slightly withdrawing the foot, so as to drop on the lever without danger of losing the pedal.

In using ordinary toe-clips there is always some probability that the fastening-bolt may be loosened and the clip turned laterally by the twisting action of the foot in dismounting. The clamping-plate F, with its overlapping side edges and bottom lugs, is an effectual remedy for this defect.

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

1. In combination with a bicycle-pedal and its toe-clip, a support of angular form having its horizontal part approximately in the same plane with the tread of the pedal though slightly below the same, the said toe-clip being hinged to the forward end of the said horizontal part and provided with a lever-arm which is bent up through an opening in the said part, in order that the pressure of the rider's foot on the end of the said lever may tilt the toe-clip over into the position ordinarily taken during propulsion of the machine substantially as set forth.

2. In combination with a bicycle-pedal and a supporting-plate attached thereto, a toe-clip hinged to the said plate and provided with an actuating lever-arm, having its tip recurved to form a stop for engaging with the said plate, in order that the said toe-clip may not turn over too far substantially as set forth.

3. In combination with a bicycle-pedal and a supporting-plate attached thereto, a toe-clip hinged to the said supporting-plate and a clamping-plate attached to the pedal-frame and embracing the said edges of the said supporting-plate, the said clamping-plate being provided with lugs that extend under the said frame to guard the said clip against lateral turning substantially as set forth.

In testimony whereof I affix my signature in presence of two witnesses.

HENRY J. CONDELL.

Witnesses:

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