(No Model.)

2 Sheets—Sheet 1.

H. L. DAVIS.

BICYCLE SUPPORT.

No. 584,332. Patented June 15, 1897.

FIG 1

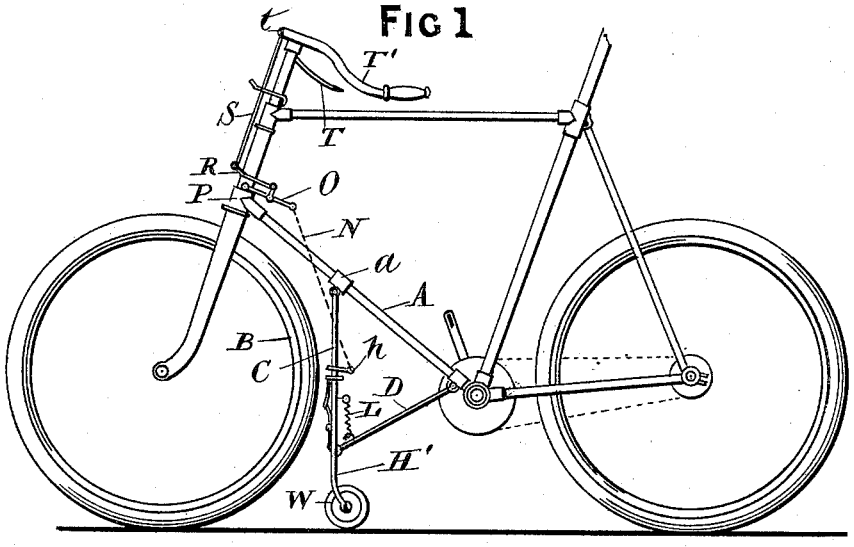


FIG 2

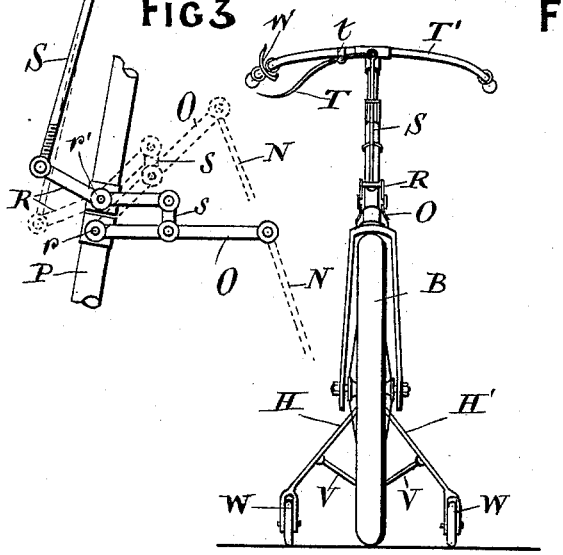


FIG 3

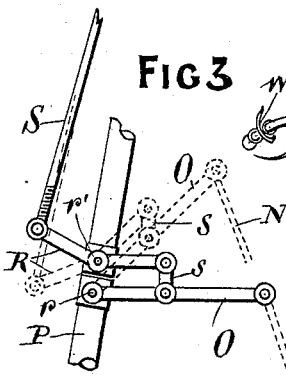
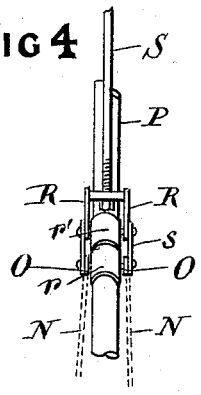


FIG 4



Witnesses
H. van Oldenneel
E. A. Scott

Inventor
Henry Lewis Davis
by Richards & R
Attys

(No Model.) 2 Sheets—Sheet 2.

H. L. DAVIS.

BICYCLE SUPPORT.

No. 584,332. Patented June 15, 1897.

FIG 5

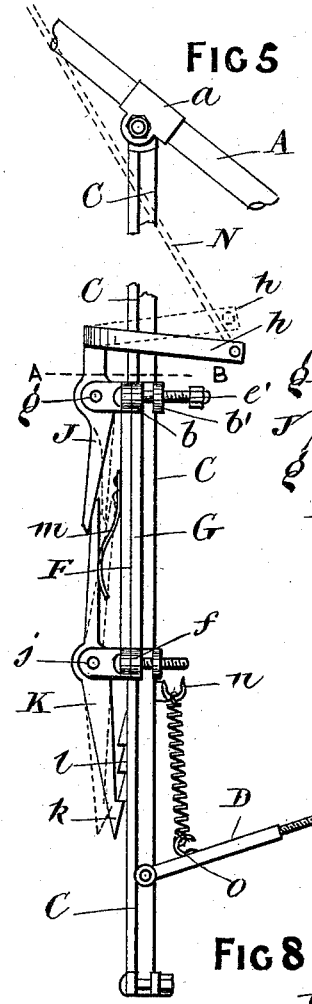


FIG 7

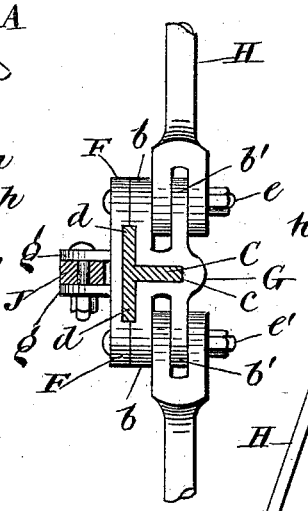


FIG 6

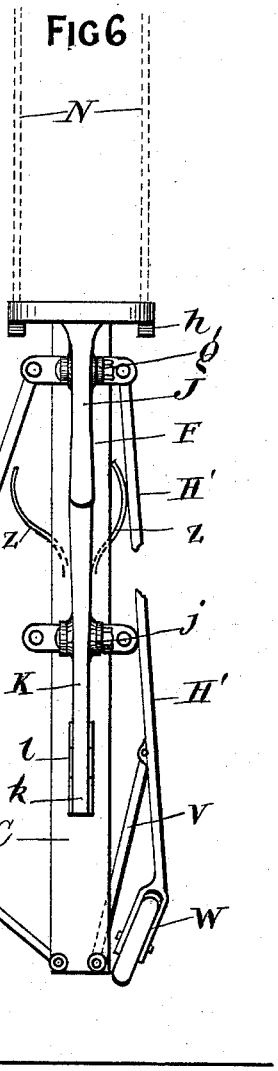
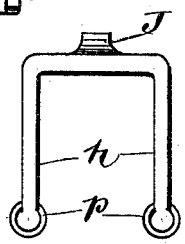


FIG 8



Witnesses
H. van Ostenneel
E. A. Scott

Inventor
Henry Lewis Davis
by Richards & R
Attys

UNITED STATES PATENT OFFICE.

HENRY LEWIS DAVIS, OF LONDON, ENGLAND.

BICYCLE-SUPPORT.

SPECIFICATION forming part of Letters Patent No. 584,332, dated June 15, 1897.

Application filed October 31, 1896. Serial No. 610,653. (No model.) Patented in England January 29, 1896, No. 2,062.

To all whom it may concern:

Be it known that I, HENRY LEWIS DAVIS, a subject of Her Majesty the Queen of Great Britain, residing at 27 Brondesbury Road, Kilburn, London, in the county of Middlesex, England, have invented certain new and useful Improvements in and in Connection with Bicycles, (for which I have applied for a patent in Great Britain, No. 2,062, dated January 29, 1896,) of which the following is a specification.

My invention relates to that class of bicycles which are supported laterally by two supports, one at each side of the machine; and it consists in certain appliances by means of which the said supports can be instantaneously lowered into and held in the position for supporting the bicycle or raised and held up, so as to be clear of the ground, when they are not being made use of. The said supports are situated one at each side of the track of the machine, and preferably close behind the front or steering wheel, and so placed and arranged that if the machine be tilted laterally in either direction (such as when describing a sharp curve) the lower end of one or the other of the said rods may at the will of the rider or riders be caused to engage with the ground and operate for the prevention of side slip, or the lower ends of both may be caused to make contact with the ground simultaneously and operate to support the machine in a vertical position when at rest or when the rider or riders may find it compulsory to stop the machine in a busy or crowded thoroughfare, and this without the need of him or her or them having to alight from the machine.

The nature of the appliances for raising and lowering the said side supports is fully shown in the appended two sheets of drawings, in which I have chosen to illustrate my invention as applied to a gentleman's ordinary safety-bicycle.

Figures 1 and 2, Sheet 1, are side and front elevations, respectively, of such a machine to which my invention has been connected. Figs. 3 and 4 are enlarged diagrams of the side and front, respectively, of a portion of the front or steering fork rod of such a machine, illustrating the manner in which I prefer to construct and arrange the levers for operating the raising and lowering of the before-mentioned supports. Figs. 5 and 6, Sheet 2, are enlarged views of portions of my invention, further illustrating the construction, fixation, and operation of the same, as hereinafter explained. Fig. 7 is a section of Fig. 5, taken upon the line A B and drawn to a still further enlarged scale for clearness of description. Fig. 8 is a top or plan view of the upper lever or crutch forming part of Fig. 5.

In carrying my invention into effect I rigidly connect, by the means of a suitable clip *a* or by other convenient means, to the lower horizontal bar A of a lady's or gentleman's safety-bicycle, and as near as convenient to the front or steering wheel B, the upper end of a depending vertical or approximately vertical metallic rod or plate C, of any suitable shape in cross-section, but which may conveniently be in the form of the letter T, as shown in cross-section in Fig. 7, the lower end of this terminating a short distance from the ground and connected by a suitable tie-rod D to the lower end of the rod A, preferably near to the bottom bracket of the machine, and I may find it convenient to arrange that the said rod D may be adjustable in length in order to render it adaptable for fixation upon frames of different formations, and I may effect this by forming one portion tubular or partly tubular, and threaded internally, while the second or other portion may be a solid rod arranged to screw into the first portion, as shown in Fig. 5, or other suitable means, such as a spring interposed between the said two parts, may be provided to attain the same end.

Upon the rod or plate C is a sliding plate, of any suitable metal or material, which may be of any shape in cross-section, according to the cross-sectional formation of C, but when the latter is of T shape in cross-section, as stated, I prefer that the said sliding plate shall be made in two pieces F and G, (particularized by Fig. 7,) the latter of which is so constructed externally as to provide upon each side a pair of lugs *b* and *b'* and internally so as to embrace the member *c* and partially the members *d* of the rod or plate C, while the piece F is so formed as to partly embrace the latter members only, the portions F and G being connected together at their upper ends by bolts or screws, such as *e* and

e', and at their lower ends by like bolts or screws f, the former of which may pass through the lugs b and b' and form pivots for the one end of a pair of rods H and H', which will be hereinafter referred to.

The portion F is provided upon the upper end of its outer face with a pair of lugs g and g', which pivotally carry a lever J, the upper end of which is formed to provide a crutch or pair of arms h, Fig. 8. The lower end of F has a pair of lugs j, which pivotally carry a lever K, at the lower end of which is a hook or catch k, which under certain conditions, hereinafter explained, makes contact with a projection or one of several projections or teeth l upon the plate F by the tension of a spring, such as m, while the upper end of K is immediately behind the lower end of the lever J, as shown in Fig. 5. The said compound plate F G slides up and down upon the plate or rod C, the downward travel of which is effected by the tension of any suitable but preferably spiral spring L, the upper end of which is connected to a hook or the like n upon G, while its lower end may be connected to a hook or the like o, either upon the lower end of the plate C or the rod D, Fig. 5, the upward travel of F G and their connections being accomplished by a pull upon a pair of chains, rods, cords, or wires N, (preferably rods,) the lower ends of which are connected to eyes in or to rings p, engaging with the said eyes in the ends of the arms h of the clutch or lever J, Fig. 8, the upper ends of N being connected to the ends of a pair of levers O, (particularized at Fig. 3,) pivoted upon a collar r, fixed upon the tube P of the front fork, these being connected by short links, such as s, or by any other suitable means to the one end of a pair of shorter levers R, pivoted upon a collar r upon P, the opposite ends of R being connected to the lower end of an adjustable rod S, the upper end of which is pivotally connected to a lever T, pivoted at t upon the handle-bar T' of the machine, and which when raised makes contact automatically with and is there retained by any suitable form of spring-catch, such as w, upon the said handle-bar.

Referring again to the rods H and H', pivotally connected at their upper ends to the sliding plates F G, as previously mentioned, these may be either solid or hollow, or partly solid and partly hollow, and either entire from end to end or otherwise, but by preference I form these in two parts, one of which may be reduced in width at one end and slide within the end of the second part and be connected thereto by a through-pin, such as X, passing through the end of the one and engaging with a short slot X' in the other, which permits a certain longitudinal expansion and contraction in the said rod, limited by the length of the said slot, and between the junction of the said upper and lower portion of each of the said rods I may introduce a powerful spiral spring X'', the tension of which tends to separate the said upper and lower portions and serves to provide a sufficient elasticity in these rods to prevent vibration when the wheels upon their lower ends first make contact with the ground. The said rods H and H' are pivotally connected at any suitable part of their length to the one end of a pair of rods V, the opposite ends of which are pivotally connected to the lower extremity of the plate or rod C, and the lower ends of H and H' are preferably curved toward the back end of the machine, as shown in Fig. 1, and each carries at its lower end a wheel or roller, such as W, which may be provided with solid, cushioned, or pneumatic tires, as desired. The said rods H and H' are normally held with their wheels or rollers W out of contact with the ground by the lever T making contact with the spring-catch w, and while so raised these fold up against and close to the plate or rod C, as shown in the right-hand side of Fig. 6, but when the rider desires to stop the machine without alighting therefrom he would simply operate the spring-catch w and release the lever T, when the tension of the spring L exerting a downward pull upon the sliding plate F G this and its accessories would be instantly lowered, taking with it the rods H and H', and these as lowered would have their lower ends thrust outwardly by the rods V until their wheels or rollers W made contact with the ground, the position of the said rods then being substantially that shown at the left-hand side of Fig. 6 and as at Figs. 1 and 2, and at the moment that the wheels W touched the ground the hook or catch k on the lever K would make contact with one, and eventually the lower, of the projections or teeth l on the plate or rod C by the tension of the spring m, as shown in Figs. 5 and 6, and thus prevent the return or upward movement of the compound plate F G and rigidly maintain the perpendicularity of the machine; and that the sudden impact between the wheels W and the ground may not cause shock or vibration to the rider, is the object and purpose of the spring X'', previously explained.

If the machine be standing upon fairly even ground, the rider may proceed at a walking pace with the wheels W still upon the ground, but when it is desired to again raise these he or she would simply raise the lever T (by grasping this and the handle-bar of the machine in the usual way) until this automatically makes contact with and is held and locked by the spring-catch w, and the commencement of such raising of T would exert a pull upon the chains, rods, or the like N, and by reason of the firm contact between the catch k and the projection l such pull upon the ends of the arms h would cause these and the lever J to take the position shown by dotted outline in Fig. 5, and such movement of J would cause its lower end to press toward the plate or rod C the upper end of the lever

K against the tension of the spring *m*, thus releasing the catch *k* from the projection *l*, the remainder of the upward movement of the lever T serving to raise the compound plate F G and its connections to its highest position and the rods H and H′ to the position shown at the right of Fig. 6. In order to overcome the inert position of the said rods H and H′ when first lowering these from their position of rest shown at the right of Fig. 6 to that shown at the left of the same figure, I may find it convenient to introduce between the said rods a spring or a pair of springs, as suggested at Z, Fig. 6, the tension of which would operate to thrust the said rods apart from each other.

In order that the short distance traversed by the movements of the lever T may suffice to effect the greater distance traversed by the sliding plate F G is the object and purpose of the compound levers R and O, the approximate lowest position of which is shown by full lines and their approximate highest position by dotted outline in Fig. 3, by reference to which it will be seen that the distance traversed by the ends of the levers R, connected to the rod S, (which would be equal to that traversed by the shorter end of the lever T,) is one-fourth, or thereabout, the distance traversed by the free ends of levers O, which may be taken to equal the distance traversed by the vertical movements of the compound plate F G and its connections.

I may attain the same result by dispensing with the lever O and the links or the like *s* and extend the back end of the lever R to a point equal to the length of O, in which case the rod, cord, wire, or the like N would be connected directly to the end of R.

From the foregoing it will be understood that by a judicious manipulation of the lever T the rider may (when upon a greasy road or turning a sharp corner) keep the wheels or rollers W so near to without actually touching the ground that the slightest inclination of the machine to either side would place the wheel W at that side in contact with the ground and so prevent or assist to prevent side slip of the track-wheels of the machine, and the said device may also be employed for supporting the perpendicularity of the machine after the riders have alighted therefrom and for assisting beginners in learning to mount and dismount.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is—

In combination with the lower bar of a bicycle, the rod C pivotally connected thereto, the adjustable brace-arm D therefor, the carrier on said rod, the legs pivoted to the carrier and carrying wheels, the links from said rod to the lower ends of said legs, means for holding said carrier and legs lowered and means for raising them from the handle-bar of the bicycle, substantially as described.

In witness whereof I have hereunto set my hand in presence of two witnesses.

HENRY LEWIS DAVIS.

Witnesses:
HENRY CONRAD STEIDL,
GEORGE THOMAS HYDE.