No. 680,741. Patented Aug. 20, 1901.

R. B. STARBUCK.

VELOCIPEDE DRIVING MECHANISM.

(Application filed Dec. 26, 1900.)

(No Model.) 2 Sheets—Sheet 1.

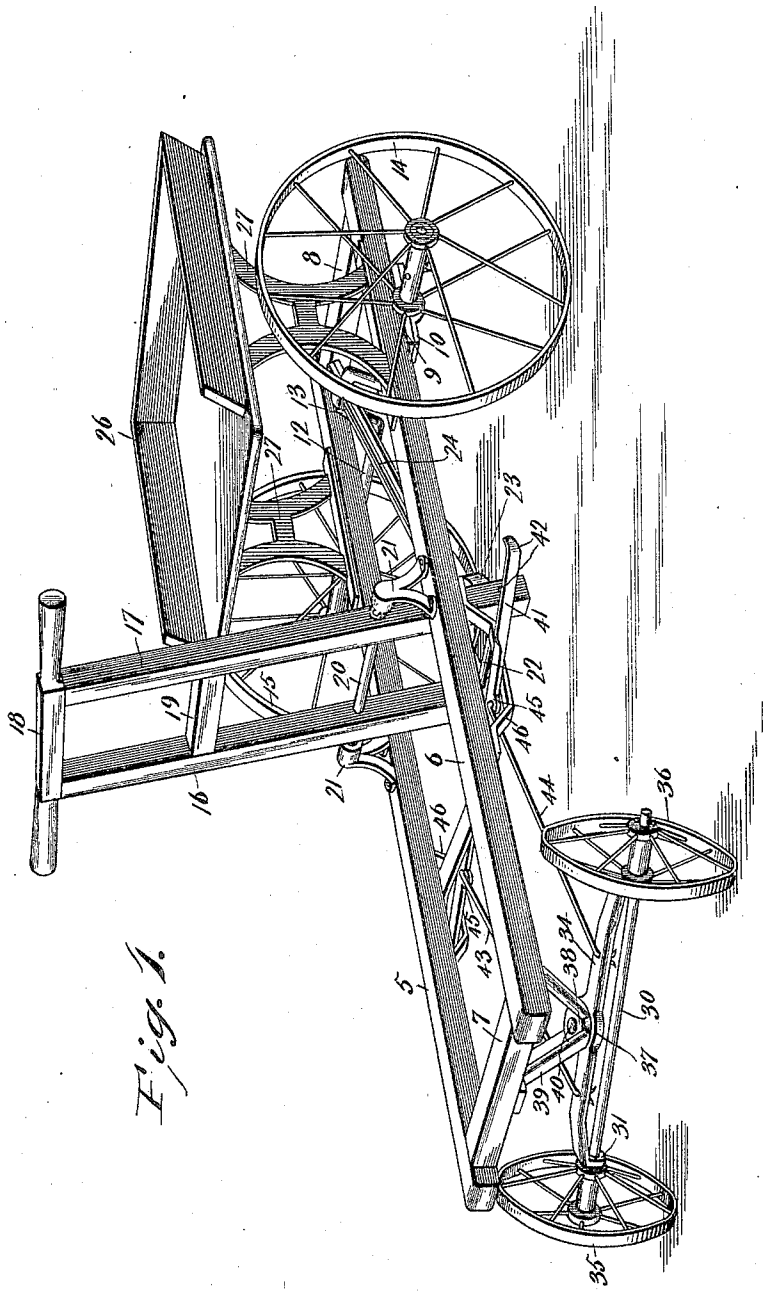


Fig. 1.

Witnesses
C. M. Walker.
Geo. H. Chandlee.

R. B. Starbuck, Inventor.
by Cushman & Co.
Attorneys

THE NORRIS PETERS CO. PHOTO-LITHO., WASHINGTON, D. C.

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Fig. 2.

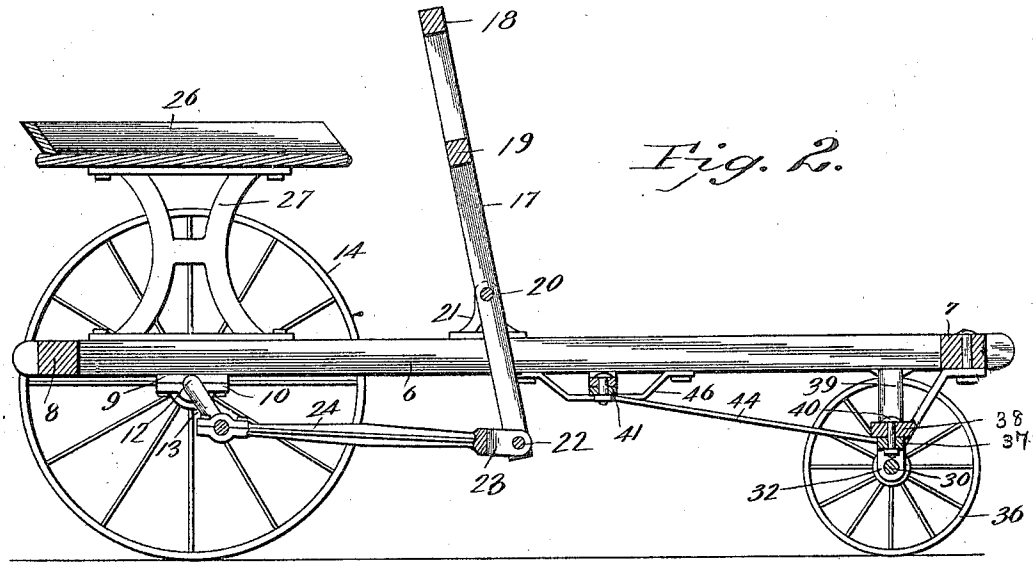
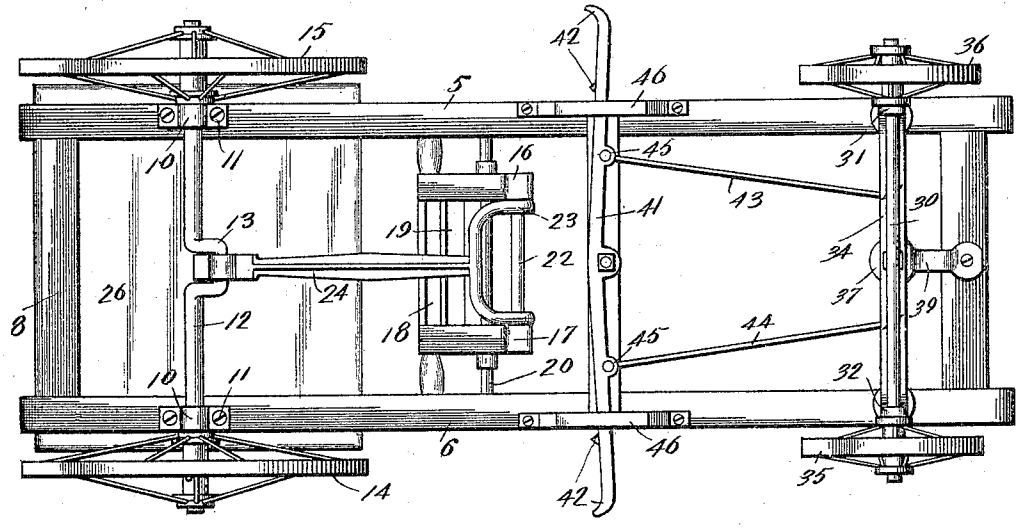


Fig. 3.



Witnesses
H. C. Walker.
Geo. F. Chawalee.

R. B. Starbuck, Inventor.
by Church & Co.
Attorneys

THE NORRIS PETERS CO. PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

ROBERT B. STARBUCK, OF MATTOON, ILLINOIS.

VELOCIPEDE DRIVING MECHANISM.

SPECIFICATION forming part of Letters Patent No. 680,741, dated August 20, 1901.

Application filed December 26, 1900. Serial No. 41,146. (No model.)

To all whom it may concern:

Be it known that I, ROBERT B. STARBUCK, a citizen of the United States, residing at Mattoon, in the county of Coles and State of Illinois, have invented a new and useful Velocipede Driving Mechanism, of which the following is a specification.

This invention relates to velocipedes in general, and more particularly to that class wherein the propelling mechanism is operated by hand, while the steering is done with the feet, the object of the invention being to provide a construction in which the hand-lever will be so constructed and positioned as to permit of being operated by a person occupying the seat, while the power from the lever will be applied to the drive-axle at such a point as to secure a maximum efficiency.

Additional objects of the invention relate to the specific mechanical details and the arrangement of the parts, the advantages of which will be evident from the following description.

In the drawings forming a portion of this specification, and in which like numerals of reference indicate similar parts in the several views, Figure 1 is a perspective view showing the complete vehicle. Fig. 2 is a central longitudinal section of the vehicle. Fig. 3 is a bottom plan view of the vehicle.

Referring now to the drawings, the present velocipede consists of longitudinal sills 5 and 6, having connecting cross-pieces 7 and 8 at its ends, and upon the under sides of the sills and adjacent to the rear ends thereof are fixed bearing-boxes. Each of these bearing-boxes consists of an upper plate 9 and a lower plate 10, held together by means of bolts 11, passed upwardly or downwardly therethrough and through the sills, as preferred, and which act to hold the boxes in place as also to adjust the relations of the plates. Each pair of plates have concave bearing-faces in their mutually-adjacent portions to form bearings for the drive-axle 12, which latter projects with its ends beyond the outer faces of the sills, while intermediate of the sills the axle is bent to form a crank 13, for a purpose to be presently explained.

Upon one end of the driving-axle is fixed a driving-wheel 14, while a supporting-wheel 15 is mounted loosely upon the other end of the axle. The velocipede is driven wholly from this one drive-wheel, so that if the velocipede be turned to the right or the left there will not be the usual slipping of one of the rear wheels which occurs when two drive-wheels are fixed upon a common shaft or axle. This simple arrangement precludes the necessity for the usual differential gear.

To rotate the drive-axle, a hand-lever is provided. This hand-lever consists of two parallel members 16 and 17, which are connected at their upper ends by a cross-bar or handle 18, which projects beyond the members 16 and 17, as shown, and below this handle are arranged cross-braces 19 of suitable number. Passed transversely through the members 16 and 17 is a supporting-shaft 20, having bearings in pillow-blocks 21, mounted upon the sills 5 and 6, while connecting the lowermost ends of the pieces 16 and 17 is a second shaft 22. Engaged with the shaft 22 are the ends of a yoke 23 at the end of a connecting-rod 24, the side faces of which yoke lie closely against the inner faces of the pieces 16 and 17, and the opposite end of the connecting-rod is engaged with the crank 13 of the drive-axle 12. The head of the connecting-rod is formed in two pieces, as shown, held together with bolts, which permit of adjustment of the bearing between the rod and crank to compensate for wear of the parts. With this construction it will be seen that if the hand-lever be operated by rocking it forwardly and backwardly the connecting-rod will be operated to rotate the drive-axle to operate the drive-wheel. A seat 26 is mounted on standards 27, fixed to the upper faces of the sills in the rear of the hand-lever and directly over the drive-axle, the seat being so spaced that the operator may readily enter or leave the seat from one side or the other thereof.

The front or steering wheels of the velocipede are mounted rotatably upon the ends of an axle 30, which is secured in perforations in the downturned ends 31 and 32 of an axletree 34, these wheels 35 and 36 being preferably of the style illustrated.

Upon the central portion of the axletree 34 is formed the lower member 37 of the fifth-wheel, the upper member 38 thereof being formed at the lower end of an inverted tripod

39, the ends of the legs of which are bolted to the under sides of the sills 5 and 6 and the forward cross-piece 7.

A king-bolt 40 is engaged with the members of the fifth-wheel, and to oscillate the axletree to steer the velocipede a foot-lever is provided. This foot-lever (shown at 41) is pivoted upon the under side of a cross-piece, which is secured against the under sides of the sills 5 and 6, and said lever projects laterally beyond the sides of the sills and is provided with spaced lugs 42 on its rear face, of which two are at each end of the lever and so disposed as to receive the foot of the operator between them, these lugs preventing slipping of the feet from the lever. Connecting-rods 43 and 44 are engaged at their rear ends with perforated ears 45 on the lever, these rods having bent and headed ends which are directly engaged with the perforations, with the heads preventing upward displacement of the rods. The rods are continued forwardly and convergingly and have their forward ends bent downwardly and engaged through perforations in the axletree 34, the extremities of these downturned ends being bifurcated to permit of them being separated, as shown in Fig. 1, to prevent withdrawal thereof. With this converging arrangement of the connecting-rods a slight movement of the steering-lever moves the singletree through an arc of greater radius than the lever is moved, so that slight movement only of the lever is required to steer the velocipede. To prevent excessive movement of the steering-lever, U-shaped straps 46 are engaged over the ends of the lever and are secured against the under faces of the sills, so that by engaging the straps the movement of the lever is limited. These straps also prevent downward bending of the ends of the steering-lever. With this construction it will be seen that there is provided an extremely simple and cheap construction which may be easily steered, in which the power is applied in a manner as to secure efficiency of operation, and in which the slipping of drive-wheels is prevented. Also the operating-lever is formed and located so as to permit of easy ingress and egress of the operator, while the entire apparatus has great strength and durability.

It will be noted that on the shaft 20 are collars disposed against the outer faces of the sides of the hand-lever and which serve to prevent outward displacement of the sides, while the arms of the bifurcated connecting-rod prevent inward displacement.

It will of course be understood that in practice various modifications of the specific construction shown may be made and that any suitable materials and proportions may be used for the various parts without departing from the spirit of the invention.

What is claimed is—

A velocipede comprising a body consisting of spaced longitudinal sills and connecting cross-pieces, pillow-blocks secured to the under sides of the sills and having a crank-shaft mounted therein and provided with driving-wheels at its ends, a seat mounted upon the sills above the crank-shaft, pillow-blocks mounted upon the sills in advance of the seat, a second shaft mounted in the last-named pillow-blocks, a hand-lever comprising spaced uprights pivotally mounted upon the second shaft and having spacing cross-pieces of which the uppermost cross-piece projects laterally beyond the uprights to form handles, a shaft engaged with the lower ends of the uprights below the sills, and a connecting-rod connected at its rear end with the crank of the crank-shaft and having its forward end bifurcated to form spaced arms mounted upon the shaft at the lower ends of the uprights and lying with the arms against the inner faces of the uprights to prevent inward displacement thereof.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

ROBERT B. STARBUCK.

Witnesses:
J. M. CRIPE,
J. W. BLEDSOE.