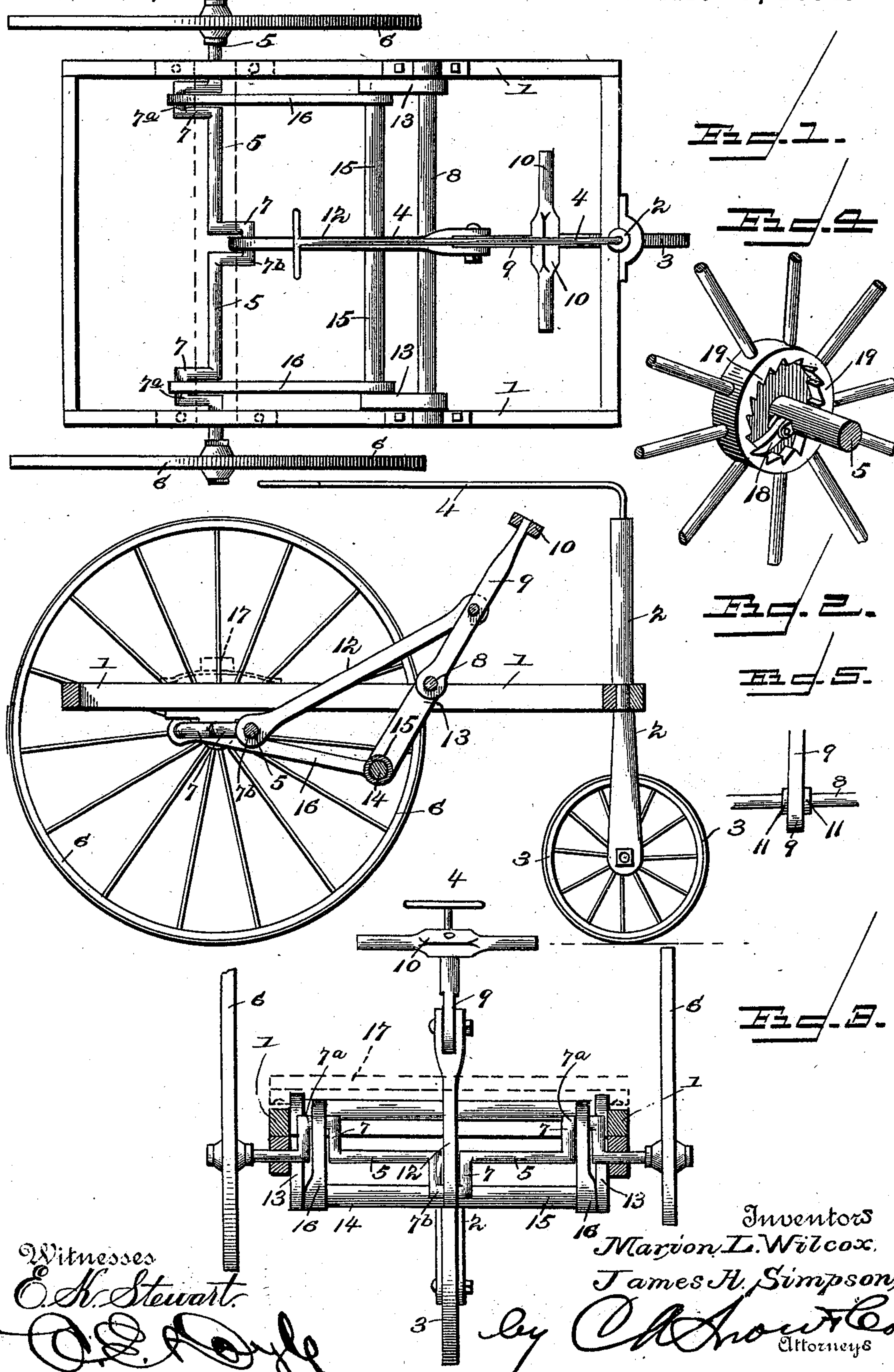


(No Model.)

M. L. WILCOX & J. A. SIMPSON.
VELOCIPÈDE.

No. 516,582.

Patented Mar. 13, 1894.



Witnesses
E. H. Stewart.
[Signature]

Inventors
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James H. Simpson,
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UNITED STATES PATENT OFFICE.

MARION L. WILCOX AND JAMES A. SIMPSON, OF MOUNTAIN GROVE,
MISSOURI.

VELOCIPEDE.

SPECIFICATION forming part of Letters Patent No. 516,582, dated March 13, 1894.

Application filed May 9, 1893. Serial No. 473,579. (No model.)

To all whom it may concern:

Be it known that we, MARION L. WILCOX and JAMES A. SIMPSON, citizens of the United States, residing at Mountain Grove, in the county of Wright and State of Missouri, have invented a new and useful Velocipede, of which the following is a specification.

Our invention relates to improvements in tricycles, quadricycles, and similar vehicles which are propelled by the rider, and it has especial reference to the driving mechanism therefor, the objects in view being to provide means employing lever power in which a continuous forward strain or pressure is maintained upon the driving axle, at all times; and furthermore, to provide means whereby both hand and foot power may be utilized in the propulsion of the machine.

In carrying out our invention we employ a driving axle provided with oppositely extending cranks which are connected, respectively, to a hand-lever and a foot-lever by means of pitmen which operate in different horizontal planes, and as the hand and foot levers are independent of each other, and are free to move independently, it is impossible for the driving mechanism to stand in such a position that neither lever can operate, or to occupy a dead center.

Further objects and advantages of our invention will appear in the following description, and the novel features thereof will be particularly pointed out in the appended claim.

In the drawings: Figure 1 is a plan view of a vehicle provided with operating mechanism embodying our invention. Fig. 2 is a vertical central sectional view of the machine. Fig. 3 is a rear view of the same, partly in section. Fig. 4 is a detail view of the pawl and ratchet connection between the axle and a wheel. Fig. 5 is a detail view showing the construction of the connection between the hand-lever and the fulcrum bar.

Similar numerals of reference designate corresponding parts in all the figures of the drawings.

1 represents a supporting framework, which may be of any suitable and approved construction, in the front bar of which is rotatably mounted a vertical steering-bar, 2, car-

rying a steering-wheel, 3, and provided with a rearwardly extending handle, 4, whereby such steering wheel may be operated. The driving-axle, 5, is mounted in suitable bearings in the side bars of the framework, and to its extremities are fixed the driving wheels, 6. This shaft is provided with oppositely extending cranks, 7, and in the construction illustrated in the accompanying drawings the terminal cranks, 7^a, are parallel and extend in the same direction from the axis of the shaft, and the intermediate crank, 7^b, projects from the axis of the shaft in an opposite direction to the cranks, 7^a.

8 represents a transverse horizontal bar, upon the center of which is fulcrumed the hand-lever, 9, provided with the usual cross-bar, 10, for the hands of the operator. The lower end of the hand-lever is held from lateral displacement upon the fulcrum bar, 8, by means of shoulders, 11, the surfaces of which bear against opposite sides thereof. The hand-lever is arranged at the center of the fulcrum-bar, and is connected at an intermediate point, by means of a pitman, 12, to the intermediate crank, 7^b, of the driving axle. Fulcrumed upon the terminals of the fulcrum-bar, 8, and depending therefrom, are the oscillatory links, 13, whose lower or free ends are connected by the transverse, horizontally disposed foot-bar, 14, provided with a loose or rotatable shield, 15. This foot-bar is connected, at or near its extremities, to the terminal cranks, 7^a, by means of pitmen, 16. From the above description, taken in connection with the drawings, it will be noted, in the first place, that the hand and foot levers operate entirely independently of each other, in that the fulcrum-bar is fixed and the lever, 9, and the links, 13, are fulcrumed thereupon. It will be noted, furthermore, that both hand and foot levers are fulcrumed upon a common bar, whereby their fulcrums are in the same horizontal plane and are in alignment, and that, as a consequence, the hand and foot levers are concentric in movement. It will be noted, furthermore, that the hand and foot-levers extend in substantially opposite directions from the fulcrum-bar, and hence the pitmen by which they are respectively connected to the cranks of the driving-axle lie and op-

erate in different planes and apply the power of the respective levers in different directions, whereby the parts cannot stop upon a dead center. There is no point in the rotation of the axle that one of the levers is not in position to apply power thereto.

It will be understood that a seat for the operator may be arranged upon the bar, 17, above the driving-axle, but as such construction forms no part of our invention, we have not illustrated the same in the drawings. The driving-axle is provided with pawls, 18, to engage ratchets, 19, carried by the wheel hubs as shown in Fig. 4, to prevent backward and permit forward rotation of the wheels, independent of the axle, whereby the machine may be turned in a small space.

Various changes in the form, proportion and minor details of construction may be made without departing from the spirit or sacrificing any of the advantages of our invention.

Having thus described our invention, what we claim, and desire to secure by Letters Patent of the United States, is—

25 A velocipede, having a driving axle pro-

vided with a central and duplicate side cranks, a transverse fulcrum bar, a hand lever fulcrumed upon said bar at its center and extending upward therefrom, a pitman connecting an intermediate point of the hand lever to the central crank, links depending from and fulcrumed upon the fulcrum bar near its extremities, pitmen connecting the lower terminals of said links to the side cranks of the axle, a foot bar arranged transversely between and connecting said links at their lower ends, and a sleeve rotatable upon said foot bar, the foot bar serving as a pivot for the front ends of the pitmen and the sleeve serving as a means to hold the said ends of the pitmen in alignment with the side cranks, substantially as specified.

In testimony that we claim the foregoing as our own we have hereto affixed our signatures in the presence of two witnesses.

MARION L. WILCOX.
JAMES A. SIMPSON.

Witnesses:

L. M. NEEDHAM,
J. N. SIMMS.