

June 10, 1930.

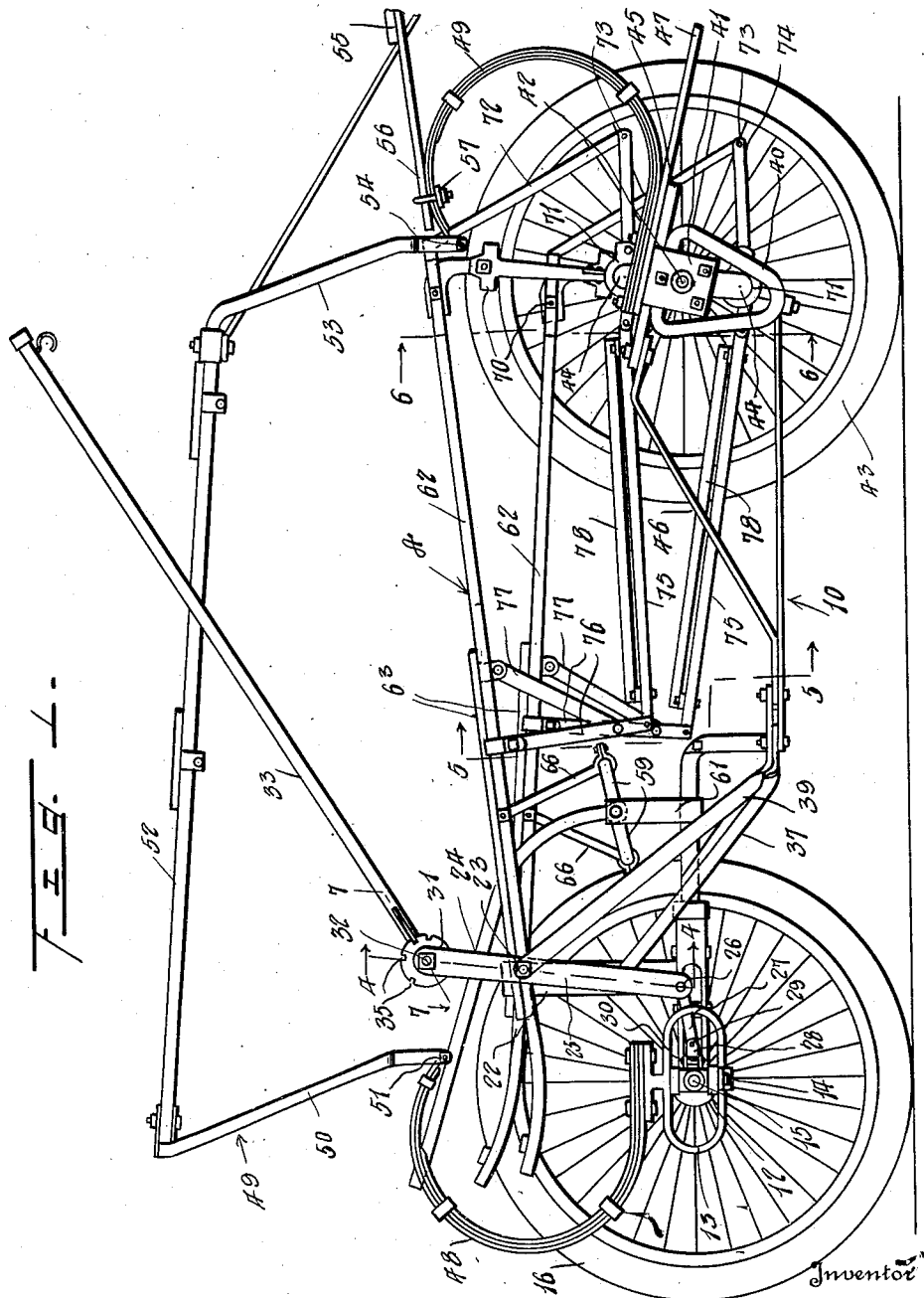
I. NETTLES

1,763,250

VELOCIPÈDE

Filed April 17, 1929

4 Sheets-Sheet 1



I. Nettles

By *L. F. Randolph Jr.*
Attorney

June 10, 1930.

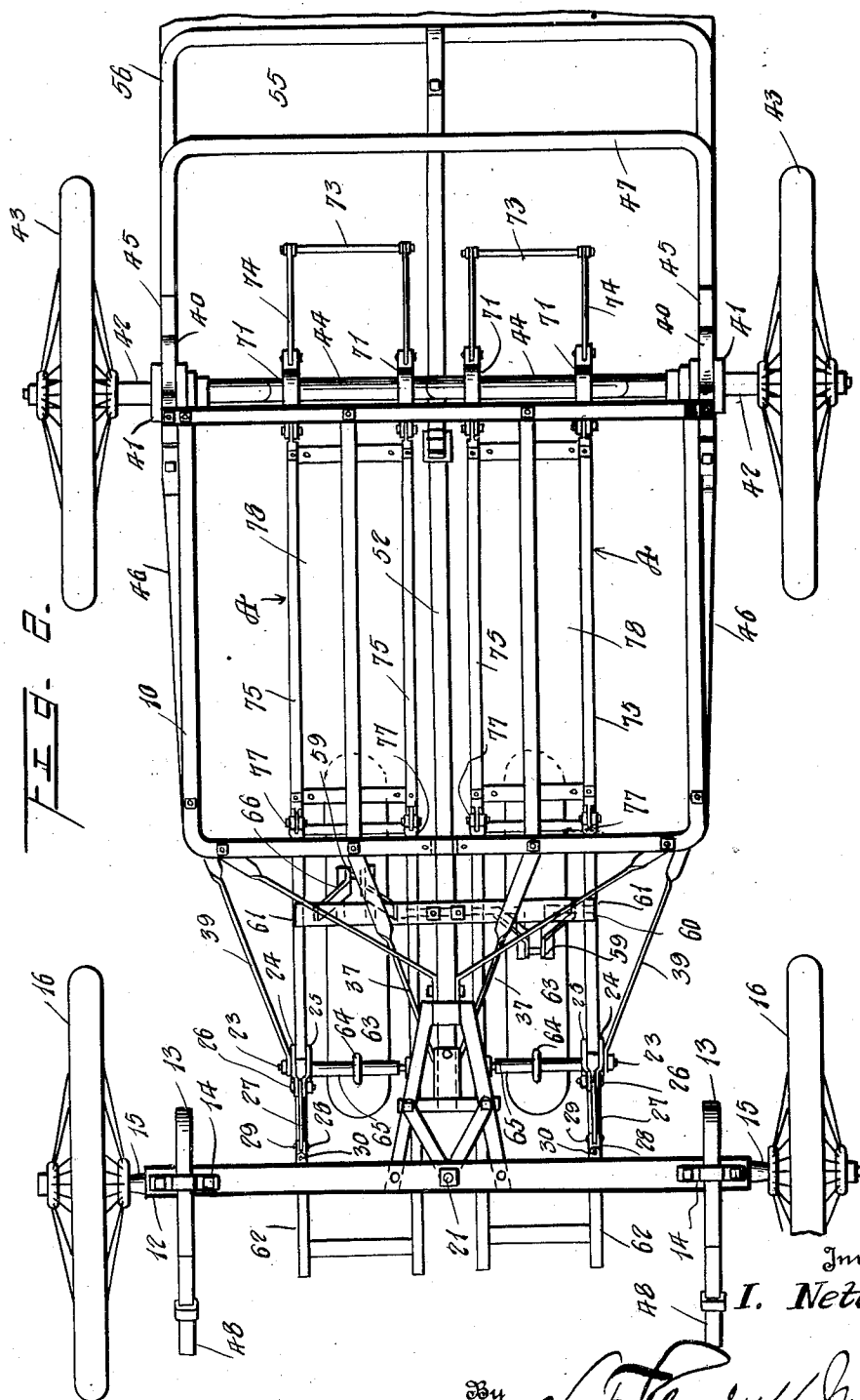
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4 Sheets-Sheet 2



Inventor

I. Nettles.

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L. F. Randolph, Jr.

Attorney

June 10, 1930.

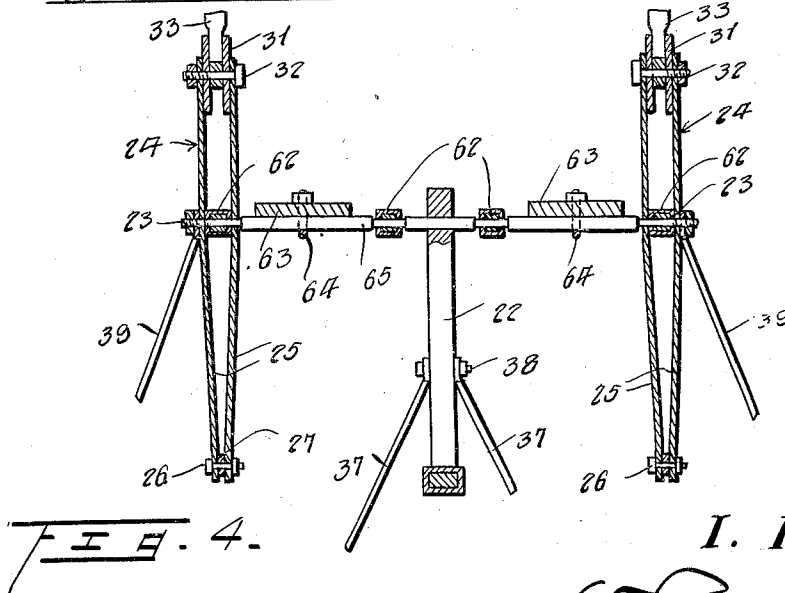
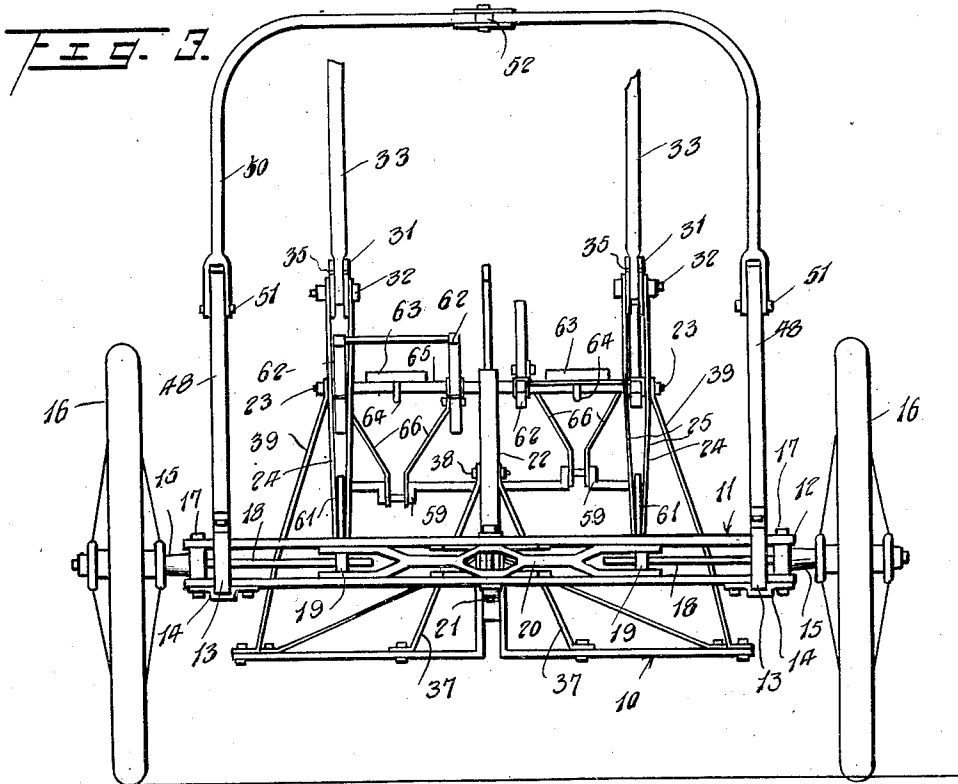
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4 Sheets-Sheet 3



Inventor

I. Nettles.

By

L. F. Tardiff, Jr.

Attorney

June 10, 1930.

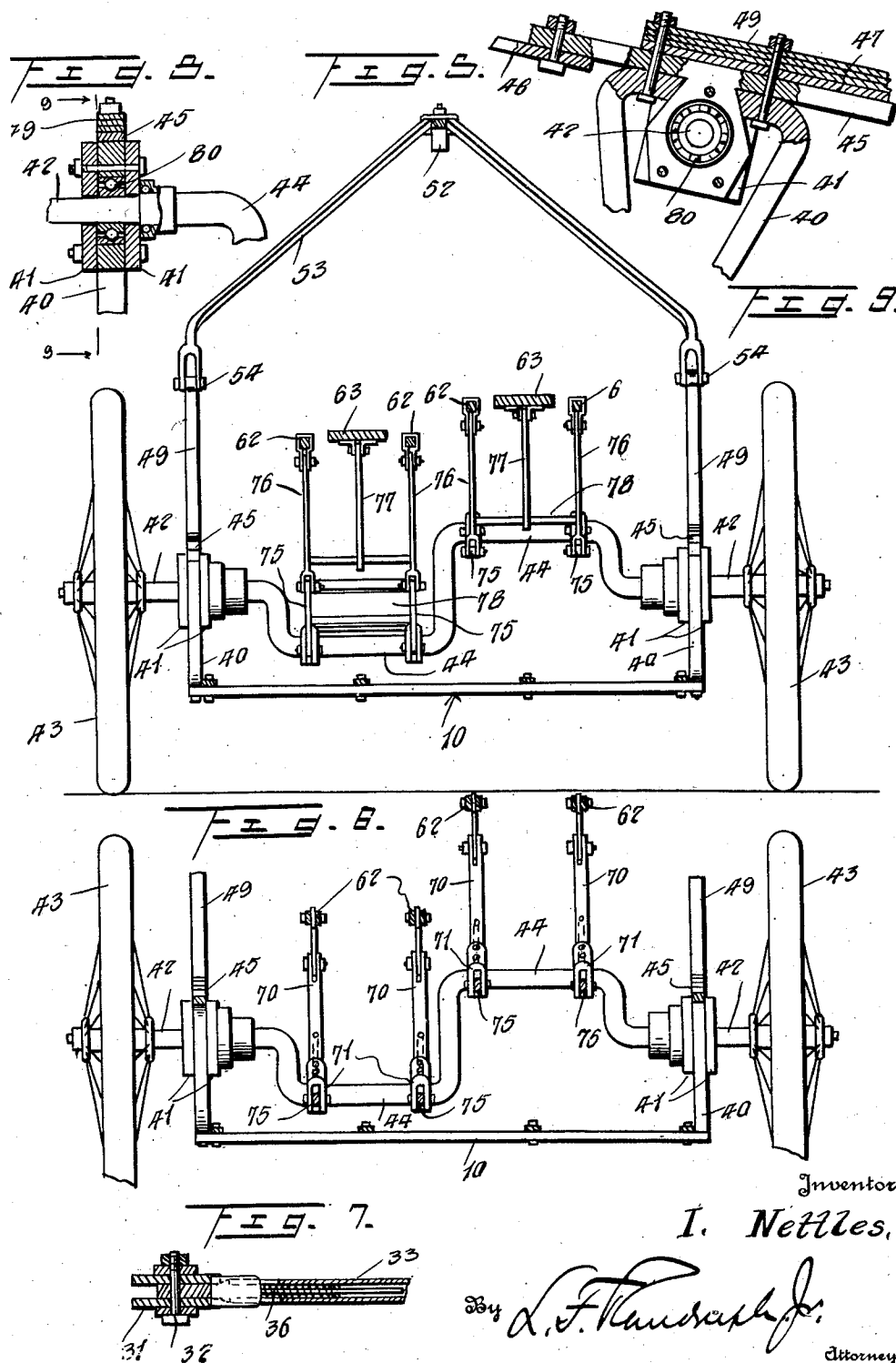
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4 Sheets-Sheet 4



UNITED STATES PATENT OFFICE

ISAAC NETTLES, OF DETROIT, MICHIGAN

VELOCIPEDÉ

Application filed April 17, 1929. Serial No. 355,840.

This invention relates to a velocipede or vehicle capable of use for business or pleasure use and for operation by foot power aided by the weight of the occupant and by the weight of carried materials within certain limits.

It is aimed to provide a novel construction constituting generally an improvement over Letters Patent for an improved velocipede No. 1,638,781, issued to me on August 9, 1927.

An important object of the present improvement is to provide a construction which may be made up in various units detachably connected together; a construction which can only reach a state of equilibrium with difficulty and to this end which is operable by lever and crank mechanism under foot control and which levers are also crank connected remote to the zone of foot operation, and to provide a construction having novel steering mechanism.

Various additional objects and advantages will become apparent and in part be pointed out in the consideration of the description following taken in connection with accompanying drawings illustrating an operative embodiment.

In said drawings:—

Figure 1 is a side elevation of the improved velocipede,

Figure 2 is an inverted plan view thereof,

Figure 3 is a front end elevation of the velocipede,

Figure 4 is a sectional view taken on the line 4—4 of Figure 1,

Figure 5 is a sectional view taken on the line 5—5 of Figure 1,

Figure 6 is a sectional view taken on the line 6—6 of Figure 1,

Figure 7 is a sectional view taken on the line 7—7 of Figure 1,

Figure 8 is a detail longitudinal sectional view taken through one of the rear wheel bearings, and

Figure 9 is a sectional view taken on the line 9—9 of Figure 8.

The vehicle or velocipede has a suitable rigid frame, preferably being of skeleton form as shown generally at 10, which frame carries a front tree structure 11 consisting of spaced apart bars 12 surrounded by rela-

tively large loops 13 which are clamped to the lower bars 12 as at 14. Short front axle members 15 have front wheels 16 journaled thereon and such axle members extend between the bars 12 and are connected thereto by king bolts 17 from the axes of which the members 15 are adapted to swing. Axles 15 have rods 18 extending therefrom and arranged between the bars 12 and slidably disposed in bearings 19 carried by a yoke 20 which is pivotally mounted by a king bolt 21 to and between the bars 12.

The frame 10 has an upright bearing 22 rigid therewith disposed centrally thereof and adjacent the front of the vehicle and said bearing adjacent the top thereof mounts a rod or shaft 23 which extends equidistantly beyond opposite sides thereof and at each end mounts a vertically disposed lever 24. Such levers may be composite as shown, each utilizing a plurality of bars 25. Bolts 26 join the bars 25 of each lever at their lower ends and pivotally connect pitmans 27 thereto which have universal joint connection with the bearing members 19 inasmuch as links 28 are provided, which are connected to the pitmans 27 by horizontal pivots 29 and to the bearings 19 by vertical pivots 30.

At the upper ends, bars 25 have disks 31 rigid therewith and are connected together by bolts 32 which also connect steering handles 33 to the levers 24. The disks 31 have notches 35 and as best shown in Figure 7, the handles 33 have spring pressed latches 36 of conventional form, adapted to be entered in either notch 35 to dispose the handles 33 at any desired angle for operation, the handles 33 during adjustment swinging on the bolts 32. In adjusted position, the handles 33, it will be realized are rigidly connected by the latch 36 with such levers 24. The loops 13 accommodate the movement of rods 18 incidental to steering. Brace members 37 for frame 10, may be connected as at 38 to the bearings 22. Braces 39 may also be connected to frame 10 and to bolts 23.

Frame 10 at the rear has two substantially triangular frame elements 40 to which bearing plates 41 are rigidly clamped and in which plates, a rear axle 42 is journaled. Rigid on

such axle 42 are the rear wheels 43 and intermediate the ends of the shaft 42 are two cranks 44, disposed in the same plane but extending in opposite directions. The plates 41 may be formed integral with bars 45 which rest on top of frame elements 40 and at the same slight rearward and downward angle, a forward U-shaped frame member 46 being connected to the bars 45 and constituting part of the frame 10. Fastened to such bars 45 and extending rearwardly, is a U-shaped frame member 47 which serves as a guard.

Front and rear springs, preferably of laminated form and generally of C-shape are provided at 48 and 49, respectively, being fastened to the loops 13 and to the bars 45 and frame 47. A conventional frame 49 to support a cover or arranged to carry goods, may consist of a front arch 50 fastened as at 51 to the springs 48 and from which a central bar 52 extends to a rear arch 53 which is fastened at 54 to the springs 49. A seat 55 may be carried by a bracket or frame 56 generally of U-shape which is fastened as at 57 to the rear springs 49. Thus the frame 49 and the seat are resiliently mounted. Attention is called to the fact that the seat 55 may be positioned on the velocipede at any desired location and that more than one may be used if preferred.

Two propelling lever devices are provided as at A, each adapted for operative driving connection with a different crank 44 and with different cranks 59 on a shaft 60 journaled in a bracket or bearing 61 rigid with the frame 10.

Said propelling lever devices A each comprises spaced main bars 62 which are journaled on the shaft 23, one bar of each pair preferably being located between the bars 25 of the levers 24 as shown in Figure 4 to aid in mounting the devices against displacement. Such bars 62 carry front boards 63 and the latter are clamped as at 64 to sleeves 65 journaled on the bar 23. Rearwardly of the sleeves 65, the bars 62 have pitmans 66 pivoted thereto and in turn pivoted to the cranks 59.

A crank arm 70 is rigid with each bar 62 and has a bearing 71 in which the proper crank 44 is journaled. Bars 62 of each pair, rearwardly of the arm 70 extend downwardly as at 72, being joined together by rods 73 also connected to arms 74 bolted to the bearings 71. Also bolted to the bearings 71 are lower bars 75 connected at their forward ends by bars 76 to the bars 62 and braces 77 preferably extend from bars 62 to bars 76. Boards or pedals 78 span and are connected to the bars 75.

The plates 45 are of such construction, as shown in Figures 8 and 9 that they mount ball bearings or the equivalent as at 80 in order that the shaft 42 may be mounted and

will operate with as little friction as possible.

As a result of the construction described, an operator seated at 56 or elsewhere, by operating the pedals 78 in the usual manner of a velocipede, will impart motion to the crank shaft 42 and accordingly to the rear or power wheel 43. It will be noted that the propelling devices A are inter-connected by the links or pitmans 66 with the cranks 59 of the shaft 60 so that motion of one propelling device will be imparted to the other and maximum power may be derived through propelling effort. At the same time, the device may be efficiently steered by moving the handles 33 forwardly or backwardly, such motion serving to tilt the levers 24 on the fulcrum 23, thus moving the links 27 and 28, yoke 20 and rods 18 to thereby shift the axles 15 and steer the front wheels 16.

Various changes may be resorted to provided they fall within the spirit and scope of the invention.

I claim as my invention:—

1. A vehicle of the class described comprising a frame, propelling wheels therefor, a crank shaft to drive said propelling wheels, lever devices operatively connected to the crank shaft for foot operation, means inter-connecting said devices comprising a crank shaft, and pitmans connecting the latter crank shaft and said devices.

2. A vehicle of the class described having propelling wheels, a crank shaft to drive said wheels, a frame having frame members, plates secured to the frame and journaling the crank shaft, means to operate the crank shaft, spring means supported by said plates, and a frame connected to the spring means.

3. A vehicle of the class described having propelling wheels, a crank shaft to drive said wheels, a frame having frame members, plates secured to the frame and journaling the crank shaft, means to operate the crank shaft, spring means supported by said plates, a frame connected to the spring means, and said plates having bars resting on the frame devices.

4. A vehicle of the class described having front and rear wheels, a crank shaft for the rear wheels, means operable to drive the crank shaft, a frame mounting the crank shaft, axles for the front wheels mounted on said frame, springs on the frame at front and rear above the axles, a frame connected to said springs, means to steer the front wheels.

5. A vehicle of the class described having front and rear wheels, an axle to drive the rear wheels provided with cranks, axles for the front wheels, means connecting the front axles for steering, a lever to operate said means, a rod journaling said lever, propelling members journaled on said rod, pitman connections between said propelling devices and said cranks, a second shaft provided with

cranks, and connections between the cranks of the second shaft and propelling devices.

6. A vehicle of the class described having front and rear wheels, a driving shaft for the rear wheels provided with cranks, shafts
5 for the front wheels, a steering connection for said latter shafts including an operating lever, a rod on which said operating lever is journaled, said operating levers comprising
10 spaced bars, propelling levers having members journaled on said rods and disposed between the bars, and connections between the propelling levers and said cranks.

In testimony whereof I affix my signature.
15 ISAAC NETTLES.

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