

(No Model.)

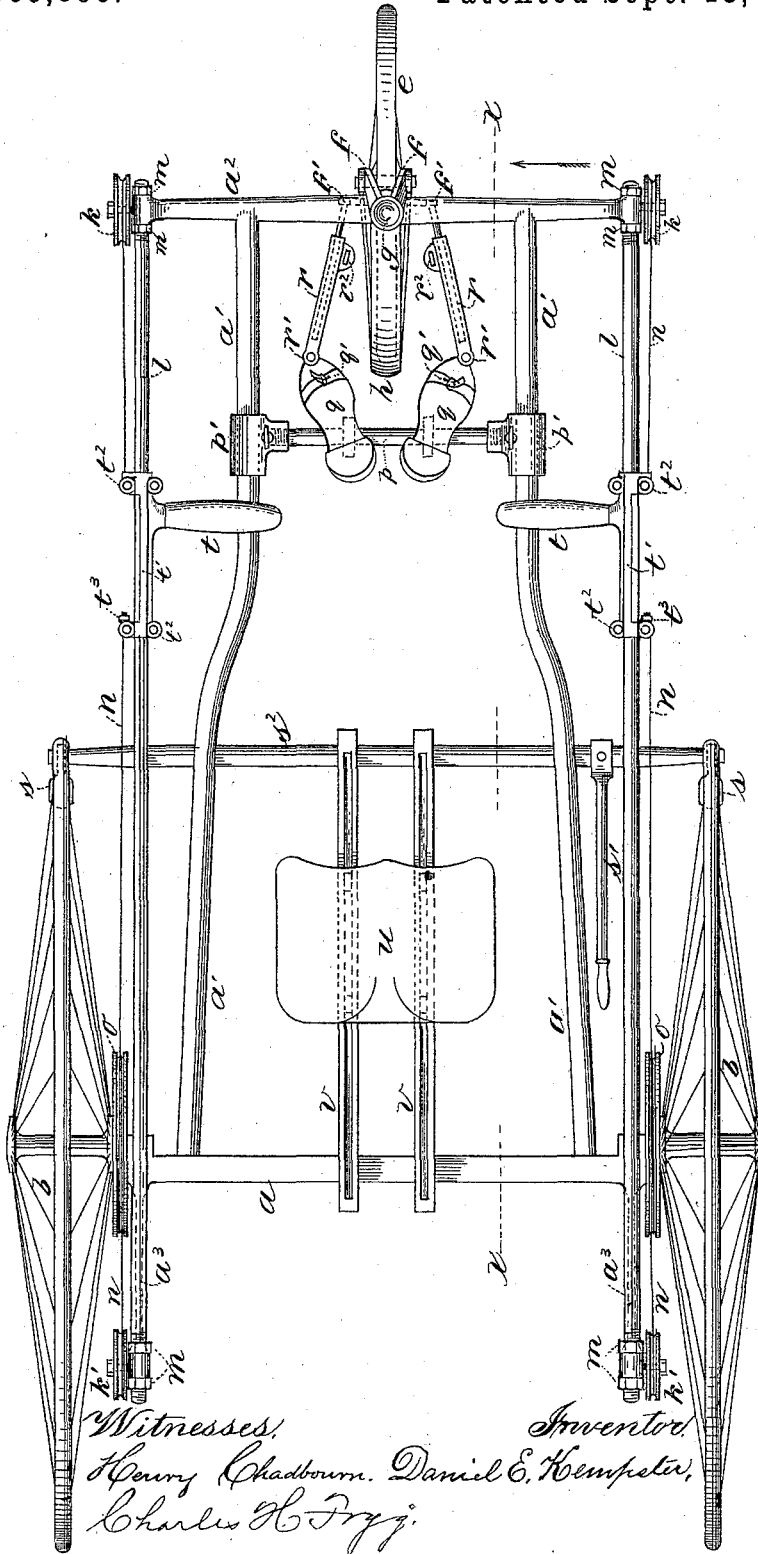
4 Sheets—Sheet 1.

D. E. KEMPSTER.

VELOCIPEDE.

No. 369,860.

Patented Sept. 13, 1887.



Witnesses:
Henry Chadburn. Daniel E. Kempster,
Charles H. Fryj.

Inventor:
Daniel E. Kempster.

(No Model.)

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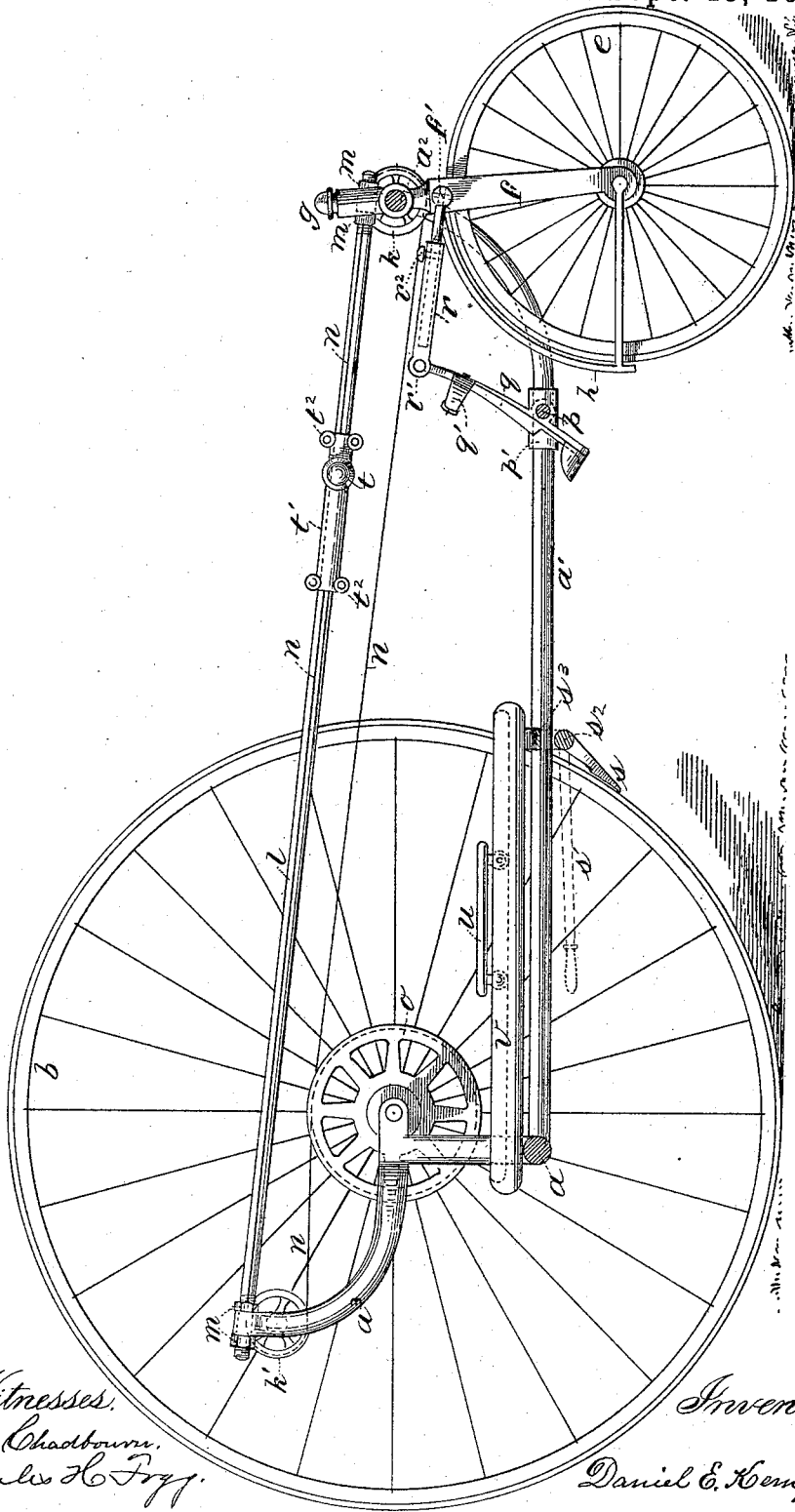


Fig. 2.

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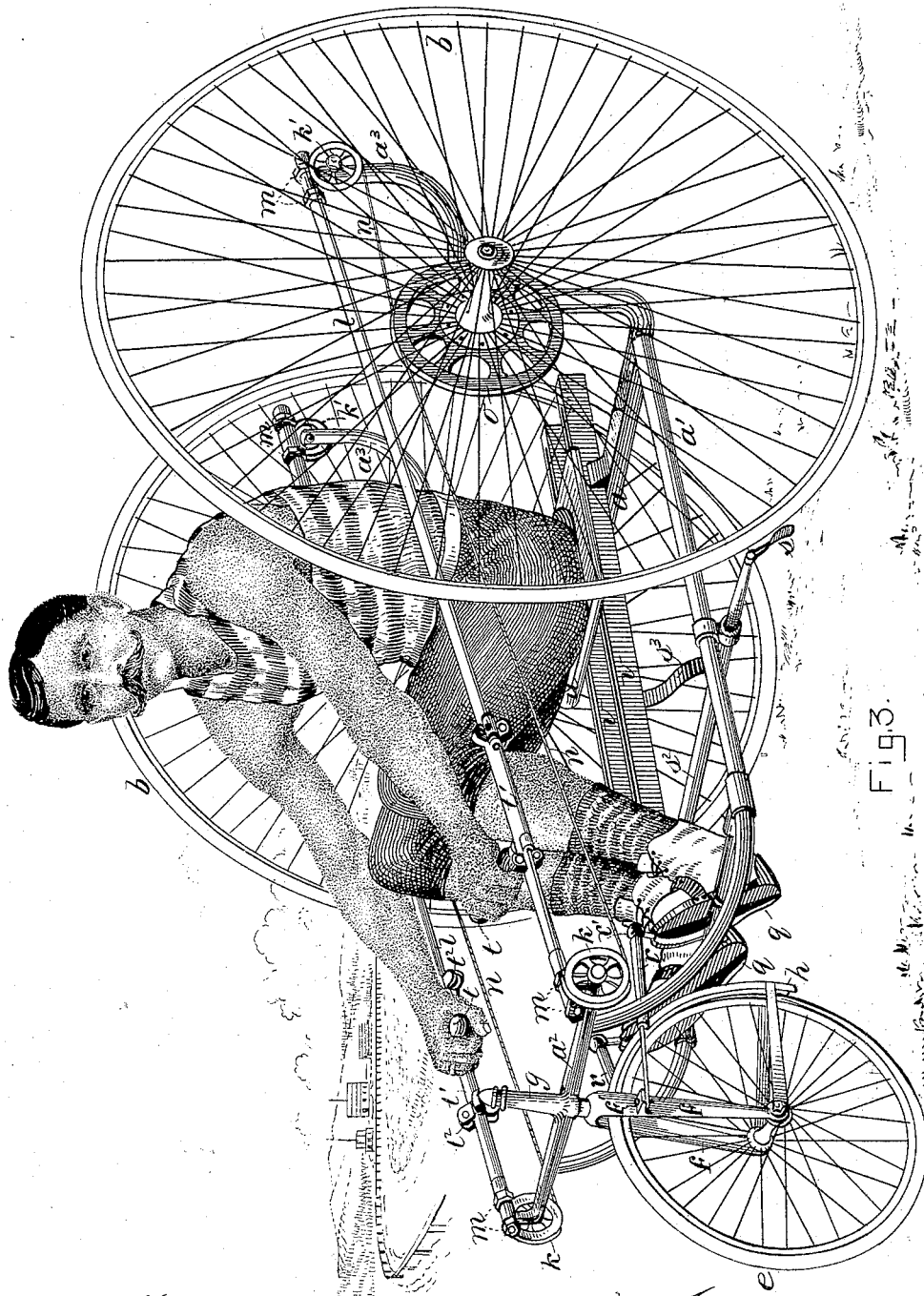


FIG. 3.

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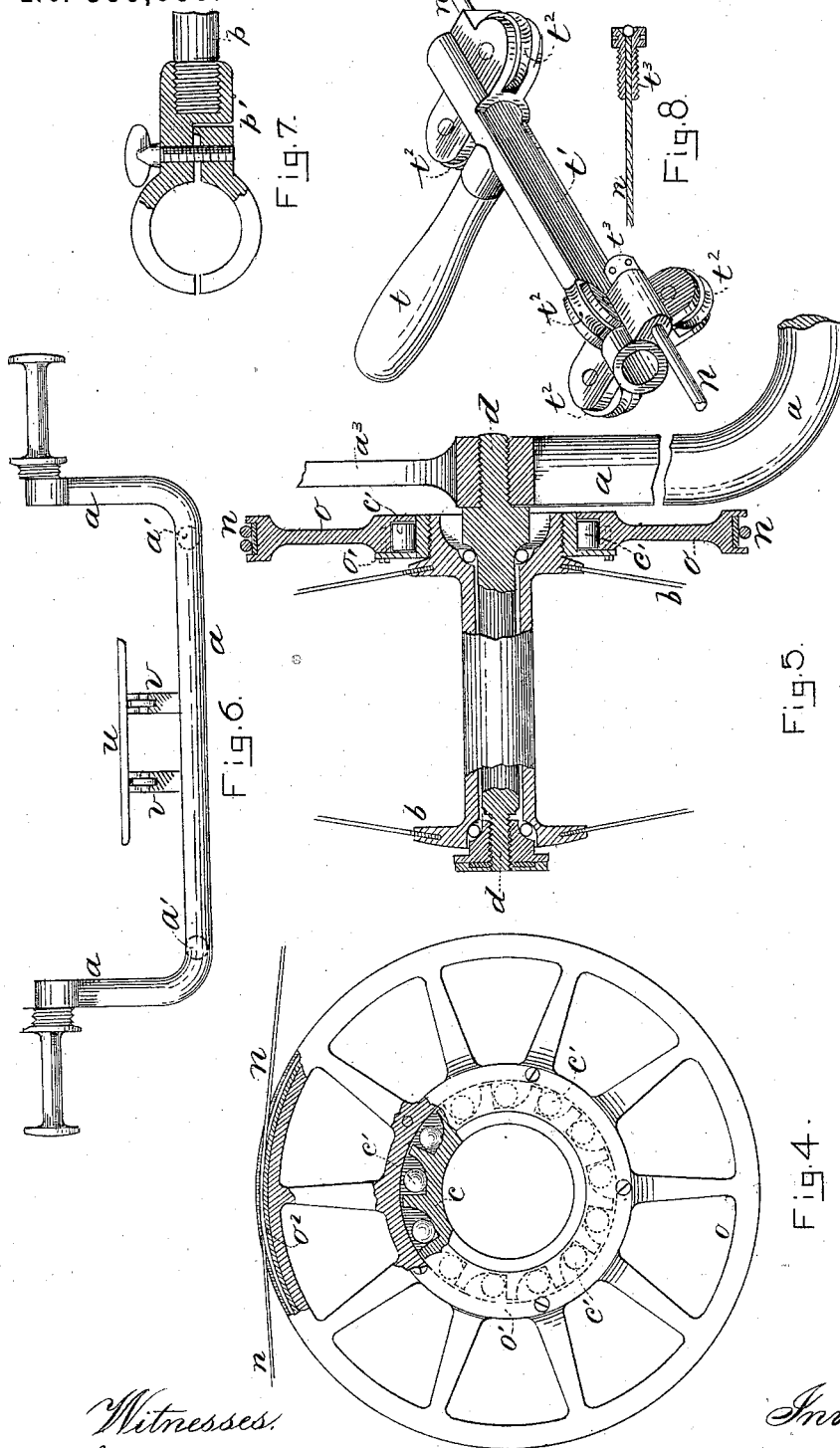
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Witnesses:
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Charles H. Fryz.

Inventor:
Daniel E. Kempster.

UNITED STATES PATENT OFFICE.

DANIEL E. KEMPSTER, OF BOSTON, MASSACHUSETTS, ASSIGNOR TO THE
KEMPSTER ROWING-TRICYCLE COMPANY, OF KITTERY, MAINE.

VELOCIPEDE.

SPECIFICATION forming part of Letters Patent No. 369,860, dated September 13, 1887.

Application filed April 7, 1887. Serial No. 234,029. (No model.)

To all whom it may concern:

Be it known that I, DANIEL E. KEMPSTER, a citizen of the United States, residing at Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Rowing Tricycles or Vehicles; and I do 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, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form a part of this specification.

My invention relates to rowing tricycles or vehicles similar to that patented by me September 16, 1884, and numbered 305,198.

My improvements which I now desire to secure are herein fully described, and specially pointed out in the claims.

In the accompanying drawings, in which similar letters of reference indicate like parts, Figure 1 is a top plan view of my rowing-tricycle; Fig. 2, a longitudinal vertical section on the line $x x$ in Fig. 1; Fig. 3, a perspective view of the tricycle, showing an oarsman in the act of rowing; Fig. 4, a side elevation, partly in section, of the right-hand clutch and clutch-pulley removed from the driving-wheel; Fig. 5, a vertical longitudinal central section of the right-hand driving-wheel hub, its attached clutch, clutch-pulley, axle, and a portion of the frame; Fig. 6, a rear elevation of the U-shaped frame, sliding seat, and axles with driving-wheel hubs thereon; Fig. 7, a longitudinal vertical section of one of the foot-bar clamps; Fig. 8, a perspective view of one of the pulling handles or slides with its anti-frictional roller-bearings and a portion of the propelling-cord attached, also a longitudinal section of one of the hollow screws for adjusting said cord.

Reference being had to the drawings, the frame or body of the machine is composed of the U-shaped axle or portion a , the side bars or portions, a' a' , the front cross-bar, a^2 , and the rearwardly-extending and upwardly-curved arms a^3 a^3 .

$b b$ are the driving-wheels, the hubs of which have screwed fast on their inner sides the clutches $c c$. The driving-wheels, with their

clutches attached thereon, are loosely mounted on axles $d d$, extending out from the frame a , and are provided with ball-bearings and means for adjusting the same in the usual manner with this class of vehicle.

e is the steering-wheel, mounted in the forked spindle f , which terminates in a central bearing or steering-head, g , on the cross-bar a^2 . The wheel e is provided with a mud-guard, h , attached to the fork, as usual. The cross-bar a^2 has loosely pivoted on its ends small grooved guide-pulleys $k k$, and the curved arms a^3 a^3 of the frame have also loosely pivoted thereon small grooved guide-pulleys $k' k'$. Parallel rods $l l$ extend from the cross-bar a^2 to the curved arms a^3 , and are held rigidly by check-nuts m thereon.

$n n$ are flexible bands or cords of any strong pliable material, preferably wire rope.

$o o$ are the grooved clutch-pulleys, mounted loosely on shoulders or bearings on the sides of the clutches fast on the driving-wheel hubs, and are held on said clutches (so as to freely revolve thereon) by the circular plates or flanges $o' o'$, affixed by screws to the side of the said clutch-pulley.

Within the cam-shaped recesses formed in the clutches c are placed a number of loose balls or rolls, c' , which wedge between the clutch and clutch-pulley when said pulley is revolved in one direction, thus locking together the said pulleys and driving-wheels, and revolving the latter in the proper direction to propel the tricycle forward. As the clutch-pulleys are revolved in a reverse direction, they instantly free themselves from engagements, so as to permit the clutches and their driving-wheels to continue their revolutions in a forward direction. The bottom of the groove in the clutch-pulleys is faced with leather or rubber, o^2 , which prevents the wire cord from slipping when the power is applied thereto. If preferred, the leather or rubber facing may be dispensed with, and the cord be prevented from slipping by winding it several times around the clutch-pulley, and, if necessary, attach it thereto at a point which would not unwind from off said pulley in the ordinary oscillation of the latter, as is quite usual in hoisting machinery.

A foot-bar, p , extends across the front of the

machine, and is adapted to be adjusted and held fast on the frame by the screw-clamps p' . On said foot-bar are the sandals q , hung so as to swivel thereon, and are provided with the foot-straps q' . On the toes of said sandals are attached the connecting-rods r by the "ball-and-socket" joints r' . Said rods are made in two parts, so as to telescope together, or be adjusted as to their length, and are held rigidly by the screws r^2 . These rods are connected or pivoted to short arms f' on the fork f , and thus by a slight pressure of the toe of either foot the fork f is caused to swivel and turn the wheel e , so as to steer the tricycle in any direction desired. s are the spoon-brakes, and s' the brake-lever, all of which are fast on the brake-shaft s^2 , extending across the machine.

t are the pulling-handles on the slides t' . Said slides are provided with anti-frictional bearings or rolls t^2 , for running on the rods or supports l , and they are also provided with hollow screw t^3 , which, by turning so as to unscrew, forms a means of tightening up the cords n , as they stretch from constant use. One end of said cord passes through said screw, and is prevented from drawing out by a knot or ball affixed on the end thereof, and the opposite end of the said cord is firmly attached to the opposite end of the said slide. Thus it will be seen that the propelling-cords are practically endless, as both ends of the same are attached to the same pulling-handle or its slide, which amounts to the same thing, the said slides being mounted on their respective rods or supporting-ways l , and free to reciprocate thereon.

As shown in Figs. 1, 2, and 3, the cords n pass from the pulling-slide forward down around the guide-pulley k on the front of the machine, thence backward to and once around the clutch-pulley o , and then still backward to and up around the guide-pulley k' on the arms a^2 , and then forward to the pulling-slides where they are adjustably attached. The movement of these pulling-slides back and forth, as in act of rowing, oscillates the clutch-pulleys, and thus alternately locks and releases their clutches, and thereby causes the rotation of the driving-wheels in the direction to propel the tricycle forward.

u is the reciprocating seat, having anti-frictional rollers, and v are parallel bars forming ways or tracks for said roller-seat, the said bars being supported by the frame a and a spring, s^3 , over the brake-shaft.

The capability of adjustment of the foot-bar p and connecting-rods r adapts the tricycle to the use of any person, no matter what the length of leg, as the machine can be readily adjusted to fit the rider and bring his weight over or near the center of the driving-wheels, where desired to obtain the best result.

The construction of the frame with the two side pieces, a' , rigidly joining a front cross-bar, as shown in Figs. 1 and 3, makes the frame more adaptable to a "fore-and-aft" adjust-

ment of the foot-bar, and also adds great strength to the frame for supporting the lateral strain occasioned by the steering-wheel turning short curves when the tricycle is traveling at a rapid rate of speed.

The construction of the frame with the rearwardly-extending portions or arms a^2 is a great advantage, as by so doing I am able to obtain a great length of stroke, as required in rowing, on a comparatively short machine, which adapts it to great speed and to readily turning short curves, the stability of the machine being fully insured by the U-shaped frame bringing the center of gravity below the centers of the driving-wheels, the frame of the tricycles being composed of weldless steel tubing properly bent and brazed together, thereby producing a machine very compact, strong, and light.

The pulling-handles are capable of swiveling as well as reciprocating on their supporting ways or rods l , and thereby permit said handles to rise and fall, and thus adjust themselves to varying positions of the hands, as required for different parts of the stroke. Furthermore, said pulling-handles being entirely independent of each other permits their use alternately, as in "canoe practice," and also facilitates the turning of the tricycle, as one handle may be pulled stronger than the other, and thus assist in turning the machine.

I do not wish to confine myself to the use of only three wheels on my machine, as my improvements are equally applicable to vehicles having four or more wheels, and I now contemplate the construction of vehicles embodying my inventions capable of carrying two, three, or four riders or rowers, and the special features of their construction will form the subject-matter of future applications for Letters Patent.

I claim—

1. In a rowing tricycle or vehicle, in combination, the driving-wheels, the clutches fast thereon, the clutch-pulleys loosely mounted on said clutches, the balls or rolls between said clutches and pulleys to lock them together in one direction, the flexible connections or cords around said pulleys, the frame, the guide-pulleys pivoted thereon and supporting said cords, the parallel reciprocating handles, pulling-handles having said cords attached thereto, and the parallel rods or ways for supporting said handles, all substantially as shown and described, for the purpose set forth.

2. In a rowing tricycle or vehicle, the pulling-handle and its attached connection or cord, in combination with means on said handle for adjusting said cord, as set forth.

3. In a rowing tricycle or vehicle, the combination, with the independent pulling-handles, of the parallel ways or rods for supporting and guiding said handles, and the endless cords attached thereto for revolving the driving-wheels, substantially as set forth.

4. In a rowing tricycle or vehicle, the frame having the upwardly-curved and rearwardly-

extending portions or arms $a^3 a^3$, whereby a great length of stroke may be obtained upon a comparatively short machine, substantially as shown and described.

5 5. In a rowing tricycle or vehicle, the frame composed of the U-shaped portion a , the side pieces, $a' a'$, the cross-bar a^2 , and the rearwardly-extending arms $a^3 a^3$, substantially as and for the purpose set forth.

10 6. In a rowing tricycle or vehicle, the independent pulling-handles having anti-frictional bearings thereon, combined with round supporting-rods or means whereby said handles are adapted to rise and fall, and thus adjust themselves as they are reciprocated, substantially as and for the purpose set forth.

15 7. In a rowing tricycle or vehicle, in combination, the parallel ways or rods, the independent pulling-handles having anti-frictional roller-bearings supported and guided thereby, and the endless flexible bands or cords attached to said handles, substantially as and for the purpose set forth.

20 8. In a rowing tricycle or vehicle, in combination, the oscillating endless cords or bands for transmitting the power, suitable supporting-pulleys for them, parallel reciprocating independent pulling-handles attached to said

cords, and clutches operated by the latter and adapted to engage and revolve the driving-wheels and propel the machine along, substantially as set forth. 30

9. In a rowing tricycle or vehicle, in combination, the frame, the foot-bar made adjustable thereon, the pivoted sandals on said bar, 35 the connecting-rods attached to said sandals by the universal or ball-and-socket joint, and the steering-wheel fork pivoted to one end of said rods, which rods are made to telescope together, and means for holding them in position, substantially as and for the purpose set forth. 40

10. In a rowing tricycle or vehicle, the steering-wheel telescoping connecting-rods rr , having the fastening-screws $r^2 r^2$, for the purpose set forth. 45

11. In a rowing tricycle or vehicle, in combination, the frame, the foot-bar p , and its clamps $p' p'$, substantially as and for the purpose set forth. 50

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

DANIEL E. KEMPSTER.

Witnesses:

HENRY CHADBURN,
CHARLES H. FOGG.