No. 881,808. PATENTED MAR. 10, 1908.

N. LARSON.

TRICYCLE.

APPLICATION FILED SEPT. 1, 1906.

2 SHEETS—SHEET 1.

Fig. 5.

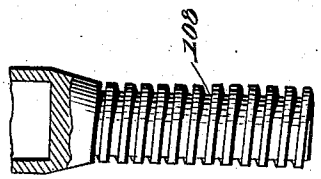


Fig. 1.

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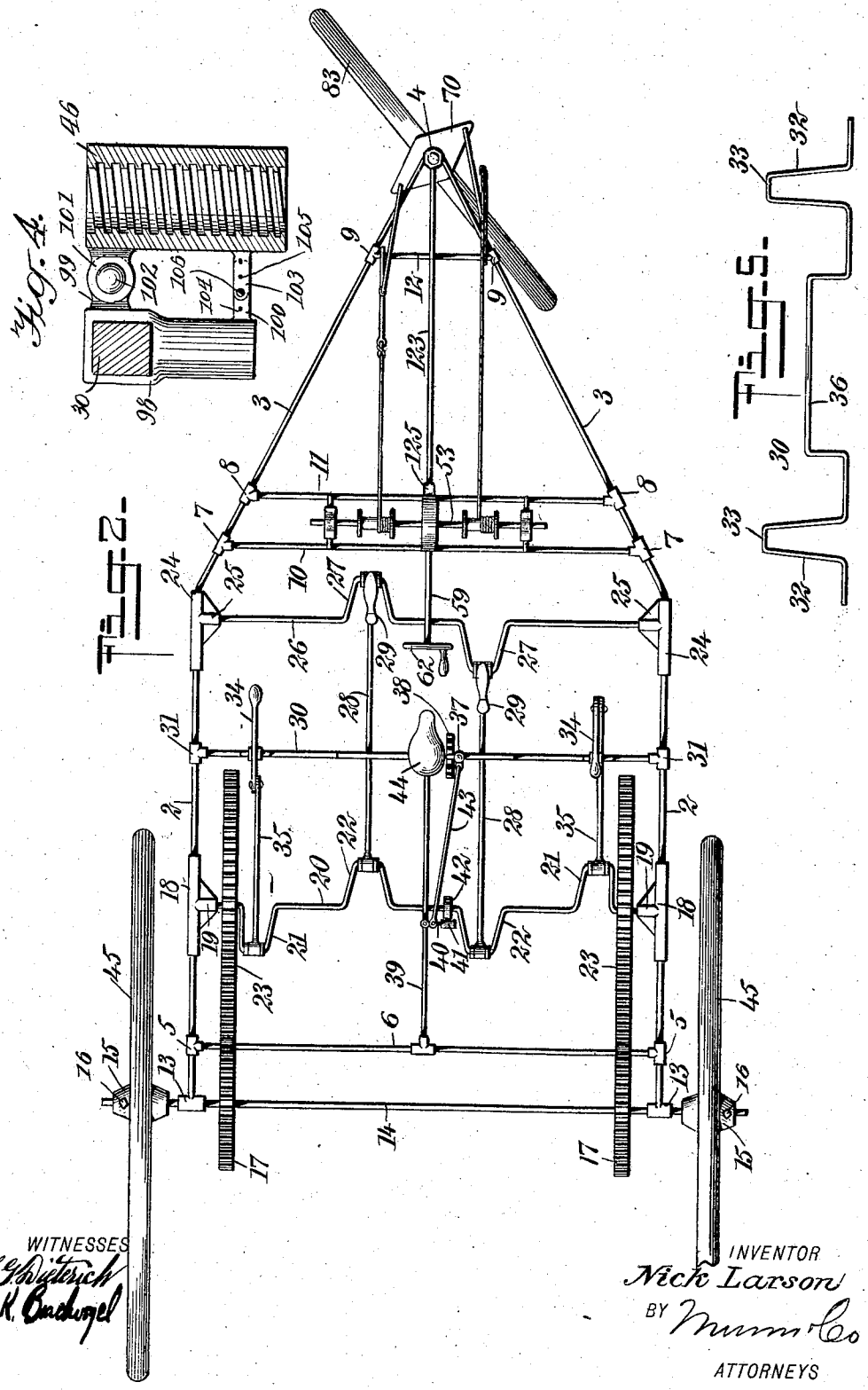
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2 SHEETS—SHEET 2.



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NICHOLAS LARSON, OF AGRA, KANSAS.

TRICYCLE.

No. 881,808. Specification of Letters Patent. Patented March 10, 1908.

Application filed September 1, 1906. Serial No. 332,913.

To all whom it may concern:

Be it known that I, NICHOLAS LARSON, a subject of the King of Denmark, and a resident of Agra, in the county of Phillips and State of Kansas, have invented a new and Improved Tricycle, of which the following is a full, clear, and exact description.

This invention relates to tricycles, and is particularly useful in connection with devices of this character which are adapted to be propelled by hand and foot power.

The object of the invention is to provide a tricycle simple, strong and durable in construction, which is provided with means for propelling it by foot and by hand.

A further object of the invention is to provide a tricycle having spur gear transmission and means for effectively braking upon the crank shaft by means of which the foot and hand power is transmitted, and in which the wheels are laterally adjustable to the width of the path.

The invention consists in the construction and combination of parts to be more fully described hereinafter and particularly pointed out in the claims.

Reference is to be had to the accompanying drawings forming a part of this specification in which similar characters of reference indicate corresponding parts in all the figures.

Figure 1 is a side elevation of my invention; Fig. 2 is a top plan view showing the steering wheel set in a position adapted laterally to deviate the course of the machine; Fig. 3 is a partial vertical cross section of the lower end of the seat post, Fig. 4 is a vertical cross section of the seat post socket; and Fig. 5 is a front elevation of a transverse member of the frame.

Referring more particularly to the drawings, I provide a frame work 1, of steel tubing or the like, such as is usually employed at present in constructing similar mechanism. The frame consists of two longitudinal members having substantially parallel sections 2, forming main members of the rear part of the frame, and forward sections 3 disposed upwardly and inwardly to converge at the point of the frame where they are secured at the lower part of a hollow head 4 by brazing or in any other suitable manner. I provide transverse members of the frame which are adapted to brace the structure and to support various parts of the mechanism, as will appear hereinafter. The sections 2 have sleeves 5 with lateral sockets, in which is mounted a transverse member 6. The ends of the transverse member 6 are laterally and downwardly disposed to permit the member to clear certain parts of the driving mechanism, which will be described hereinafter. The forward sections 3 have similar sleeves 7, 8 and 9 with lateral sockets in which the transverse members 10, 11 and 12 are mounted, as appears most clearly in Fig. 2. The sleeves are brazed upon the frame work, or otherwise suitably secured in position, and have the sockets adapted to receive the transverse members, inwardly disposed. At the back of the frame the sections 2 terminate in transverse sleeves 13, constituting bearings, in which is mounted an axle 14 having the extremities thereof extending laterally beyond the frame, and upon these extremities are mounted the back wheels 45 having hubs 15. The wheels are slidable upon the axle 14 and may be adjusted to suit the width of the path. They are secured in place on the axle at the desired distance from one another by means of set screws 16, penetrating the hubs and adapted to be forced against the axle. The axle 14 further has between the wheels and inside of the longitudinal frame members 2, pinions 17 of the usual form and provided with suitable teeth.

Mounted upon the sections 2 are sleeves 18, having lateral sockets 19, constituting bearings in which is mounted a crank shaft 20, having cranks 21 and 22 in pairs. The separate cranks of the pairs are located 180° apart, while the cranks are each located 90° apart from the next adjacent crank. The four cranks thus evenly distribute the power applied to them upon the shaft. The shaft 20 has rigidly secured upon it gear wheels 23, which are of suitable form and adapted to engage with the pinions 17 upon the axle 14. It will be understood that the gear of the machine may be altered by substituting suitable pinions and gear wheels of different sizes for those upon the machine. The power from the crank shaft 20 is transmitted through the gear wheels 23 to the pinions 17, and thus to the driving wheels 45. The ends of the sections 2 forward of the crank shaft 20, are provided with sleeves 24, having sockets 25, constituting bearings in which is mounted a second crank shaft 26, having a single pair of cranks 27 similarly located to one of the pairs of the cranks 22 upon the shaft 20. The cranks 22 and 27 are joined by connecting rods or links 28

pivotally mounted upon the wrists of the respective cranks in the usual manner. Upon the links 28, near the forward ends thereof, are foot rests 29, consituting pedals to be operated by the feet of the rider.

Mounted upon the sections 2, between the crank shafts, is a transverse member 30, which is secured to the frame in sockets 31 upon the sections 2, in a manner similar to that in which the other rigid transverse members are mounted upon the frame. The member 30 is of substantially rectangular section and has upwardly disposed portions 32, the horizontal portions 33 of which constitute bearings for hand levers 34 which are mounted thereupon. The hand levers have extremities extending downward below the parts 33, and which are adapted to reciprocate within the parts 32 when operated by hand. At the end of the hand levers, connecting rods or links 35 are provided with their opposite ends pivotally mounted upon the wrists of the cranks 21 of the crank shaft 20. It will be understood that as the hand levers are reciprocated back and forth, this reciprocal motion is translated into a rotary one upon the crank shaft 20 through the connecting rods or links 35. The transverse member has an upwardly disposed part 36, near the center, upon which is mounted a seat post socket, which will be described hereinafter. The transverse member 30 also has pivoted upon it a hand lever 37 upon the part 36, which also bears a notched quadrant 38, which is adapted to hold the lever 37 in a plurality of positions in the usual manner. A central longitudinal brace 39 extends from the transverse member 6 to the transverse member 30, and is rigidly secured to each of these members. This longitudinal brace 39 has pivoted upon it a short rod 40, having at its end a block 41, which is adapted to be forced against the edge of a disk 42 rigidly secured upon the crank shaft 20. By forcing the block 41 against the disk 42, a strong braking effect is secured which is adapted to decrease the speed of the machine with great rapidity, when so desired. A link 43, which is pivoted upon the rod 40 and at the end of the brake lever 37, permits the brake to be manipulated by the rider who is seated upon a seat 44, mounted, as will appear hereinafter, upon a seat post 107, which is secured in the seat post socket 46, (Fig. 4), upon the transverse member 30.

Mounted upon the transverse members 10 and 11 are uprights and cross-bars of the steering mechanism, carrying a transverse shaft 53 having rigid spools. A shaft 59 has a worm 60 in mesh with a gear-wheel 61 of the shaft 53. At the end of the shaft 59, within reach of the operator upon the seat 44, is a steering wheel 62. Cords or chains are wound upon the spools in opposite directions and through suitable lever bars and links control the steering plate 70, upon the tube 71 of the head 4 which carries the front wheel; thus, as the steering wheel 62 is turned, a torque or turning movement is exerted upon the steering plate 70 and the front wheel. The head 4 has a rotatable rod mounted in the tube 71 having a substantially square section carrying members having springs to absorb shocks, the members being arranged between the steering plate 70 and the head of the fork 81. Within the fork is mounted a front wheel 83 having a hub 84 and secured in place in the usual manner by extensions and nuts 85 and 86. A diagonal brace rod 123 extends from a socket 127 at the top of the head 4 to a suitable socket 125 on the transverse member.

The transverse member 30 of the frame is of substantially rectangular section. Upon this cross member, near the center, is secured a bracket 98 fitting securely upon the transverse member and having an ear 99 and a lateral extension 100. The seat post socket 46 has an ear 101 which is adapted to be secured to the ear 99 by means of a pivot bolt 102; and an extension 103, which is adapted to be adjustably secured to the extension 100 by means of a removable pin 106 passing through registering holes 104 and 105 in the extensions. By providing a suitable number of holes in these extensions, the angularity of the seat post socket with respect to the bracket may be altered at will, thereby giving the seat post any desired incline. The seat post socket is interiorly threaded and is adapted to receive the correspondingly threaded end 108 of the seat post 107.

Having thus described my invention, I claim as new and desire to secure by Letters Patent:

1. A device of the class described, comprising a frame having an axle mounted thereon, wheels on said axle, a crank shaft having pairs of cranks and means for driving said axle, hand levers adapted to rotate a pair of said cranks, a second crank shaft adapted to be rotated by the foot of the operator, and a link connecting a crank of said second shaft with a crank of said first shaft.

2. A device of the class described, comprising a frame having an axle mounted thereon, wheels and pinions on said axle, a crank shaft having pairs of cranks and gear wheels adapted to engage with said pinions, hand levers adapted to rotate a pair of said cranks, a second crank shaft adapted to be rotated by the foot of the operator, and a link connecting a crank of said second shaft with a crank of said first shaft.

3. A device of the class described, comprising a frame, an axle having pinions and adjustable wheels thereon, a crank shaft having pairs of cranks and gear wheels

adapted to engage with said pinions, a second crank shaft having cranks, links connecting said crank shafts and having foot rests thereon constituting pedals, hand levers having links adapted to rotate a pair of said cranks on said first shaft, and means for steering the device.

4. A device of the class described, comprising a frame, an axle having pinions and adjustable wheels thereon, a crank shaft having pairs of cranks, the cranks of each pair being arranged substantially 180° apart, a second crank shaft having a pair of cranks arranged substantially 180° apart, links connecting said cranks of said second crank shaft with a pair of said cranks respectively of said first crank shaft and having foot-rests thereon constituting pedals, hand levers having links adapted to rotate a pair of said cranks on said first crank shaft, and means for steering the device.

5. A device of the class described, comprising a frame having an axle mounted thereon and a transverse member, wheels and pinions on said axle, a crank shaft having pairs of cranks, and gear wheels adapted to engage with said pinions, hand levers pivotally mounted upon said transverse members, links operatively connecting said hand levers and a pair of said cranks, a second crank shaft adapted to be rotated by the foot of the operator, and a link connecting a crank of said second shaft with a crank of said first shaft.

6. A device of the class described, comprising a frame having longitudinal members with converging upwardly disposed forward ends secured to a hollow head and transverse members, an axle having pinions, a shaft having gear wheels adapted to engage with said pinions, hand levers adapted to rotate said shaft, one of said transverse members having laterally disposed ends to permit said member to clear said pinions and gear wheels, another of said transverse members having upwardly disposed parts presenting pivots for said hand levers.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

NICK LARSON.

Witnesses:
WALTER BOYD,
MABEL M. BOYD.