(No Model.) 3 Sheets—Sheet 1.

H. MATZEN.

TRICYCLE.

No. 498,750. Patented May 30, 1893.

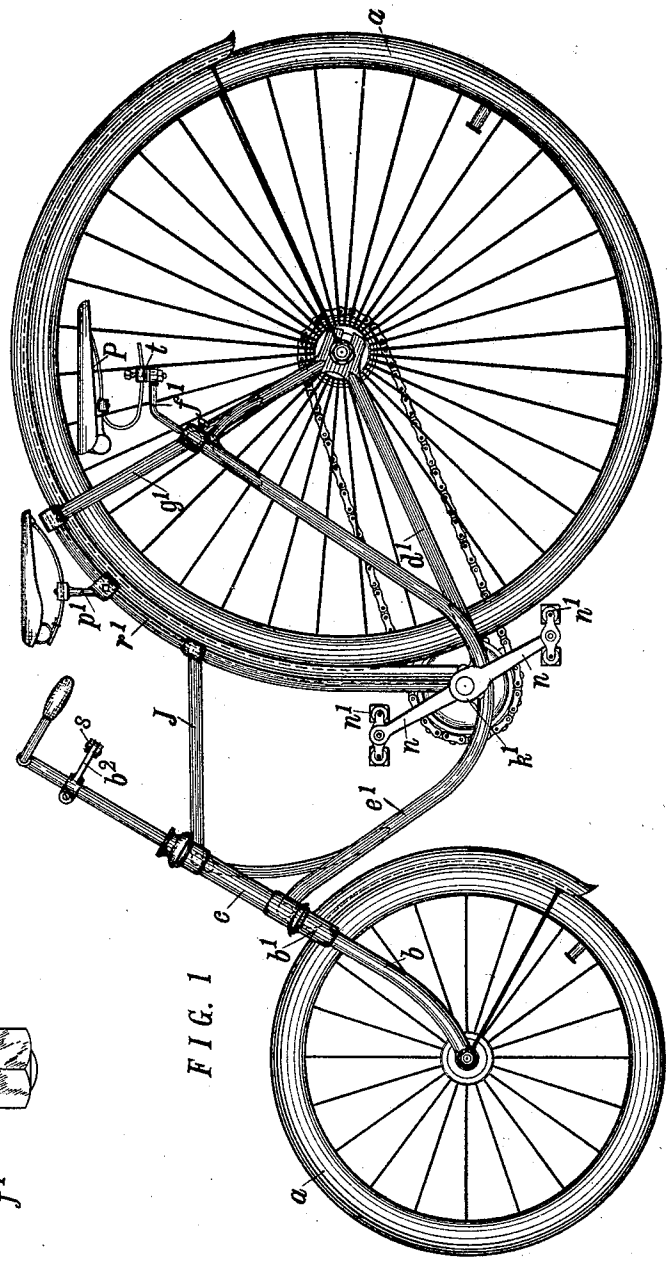


FIG. 1

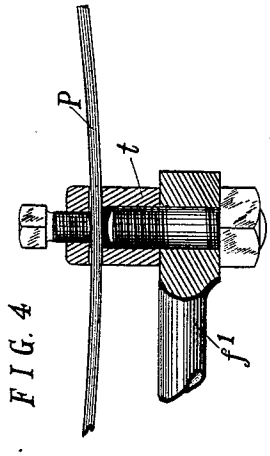


FIG. 4

WITNESSES.

Frank. Miller.

M. S. Ingham.

INVENTOR.

Herman Matzen

By King & Thurston

his attorneys

(No Model.) 3 Sheets—Sheet 2.

H. MATZEN.

TRICYCLE.

No. 498,750. Patented May 30, 1893.

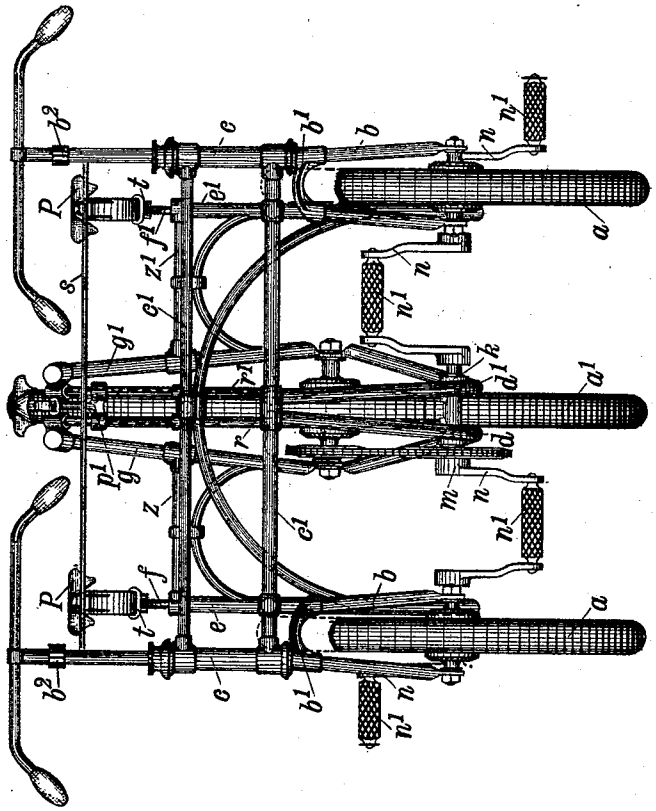


FIG. 2

WITNESSES.

Frank. Moiller.

M. S. Ingham

INVENTOR.

Herman Matzen.

By King & Thurston

his attorneys.

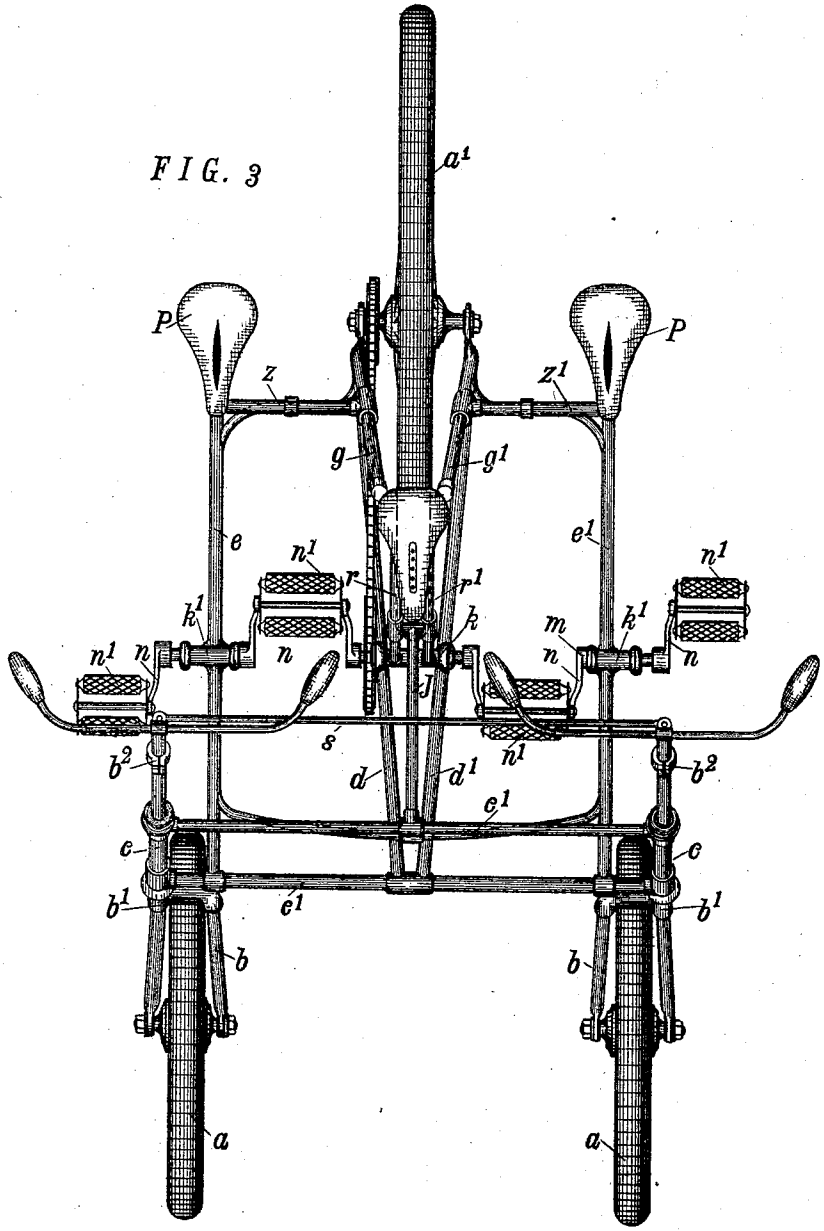
(No Model.) 3 Sheets—Sheet 3.

H. MATZEN.

TRICYCLE.

No. 498,750. Patented May 30, 1893.

FIG. 3



WITNESSES.

Frank. Meiller.

M. S. Ingham.

INVENTOR.

Herman Matzen

By Wing & Thurston

his attorneys

UNITED STATES PATENT OFFICE.

HERMAN MATZEN, OF CLEVELAND, OHIO.

TRICYCLE.

SPECIFICATION forming part of Letters Patent No. 498,750, dated May 30, 1893.

Application filed December 24, 1892. Serial No. 456,265. (No model.)

To all whom it may concern:

Be it known that I, HERMAN MATZEN, a citizen of the United States, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Tricycles; and I do hereby 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.

My invention relates particularly to what are known as sociable tricycles,—that is to say tricycles adapted to be ridden by two persons sitting side by side; although the tricycle shown in the drawings may be ridden by one person, and can conveniently carry three.

In all sociable tricycles heretofore constructed the seats for the two riders are supported between two wheels. Consequently it is difficult to get onto the seats, well nigh impossible to get off unless the machine is at rest, and even then it is inconvenient. Moreover, in case the machine should, by accident, be tipped over, both riders will get tangled up in the wheels and frame.

One of the primary purposes of my invention is to obviate the objectionable features above noted, and provide a sociable tricycle which may be as easily mounted and dismounted from as can a lady's safety,—and with which there is comparatively little danger of the riders becoming tangled up in the frame or with the wheels;—these results following mainly from the location of the seats on opposite sides of the single rear wheel.

Another object is to provide means whereby the machine will automatically incline transversely when turning,—a mode of action of great value in rapid riding, which has never been attained or attempted in tricycles so far as I am aware.

I will now proceed to describe in detail the machine shown in the drawings in which my invention is embodied, after which the parts and combination of parts which constitute the invention will be pointed out definitely in the claims.

In the drawings, Figure 1 is a side elevation of a tricycle in which my invention is embodied. Fig. 2 is a front elevation thereof. Fig. 3 is a plan view thereof; and Fig. 4 is an enlarged detail view of the mechanism for attaching the seats to the seat post.

Referring to the parts by letter *a a* represent the front wheels. They are journaled in independent front forks *b b* and, when they are parallel with the rear wheel their axles are in line. Each fork is connected in the usual manner with a fork head *b'* and each fork head extends through and has its bearings in one of the sleeves *c c*. The sleeves *c c* are rigidly connected and held at the proper distances from each other by the cross bars *c' c'*. Secured to the lower bar *c'* are four bars or tubes *d d'* and *e e'*. The rear portions of the two middle bars *d d'* constitute the rear fork in which the rear wheel *a'* is journaled. The two outer bars *e e'* extend rearward, and their rear ends, which lie on opposite sides of the rear wheel, extend upward and receive and support the seat posts *f f'*. Secured to the bars *d d'* and extending therefrom upward and rearward, following approximately the curve of the rear wheel, are the center brace bars *r r'*, which are yoked together at their upper ends. Lying on opposite sides of the rear wheel are the braces *g g'* which are connected at their ends respectively with the rear ends of the rear fork and with the center brace bars *r r'*. Cross bars *z z'* extend between and connect the braces *g g'* with the upwardly extending parts of the bars *e e'*, thereby bracing said bars *e e'*. The center brace bars *r r'* are connected with the upper bar *c'* by the bar J. The bar J, the upper parts of the center brace bars *r r'*, and the braces *g g'* constitute the back bone of the machine. The parts hereinbefore designated as bars, braces, &c., are preferably made of tubing, and the several parts are connected by brazing or welding or in any other suitable manner, and these several parts constitute the tricycle frame,—the construction of which may be modified as desired,—it being important only that it be sufficiently rigid and otherwise suitable for the intended purpose, and that means be provided for holding the seat posts on opposite sides of the rear wheel.

The tubes *d d'* are substantially of the form of the so-called drop-frame of a lady's bicycle, and to the lowest point on said tubes the crank shaft bracket *k* is secured. The tubes *e e'* are likewise bent downward from their

front ends, and the crank shaft brackets k' k' are secured to them respectively in line with the bracket k. The crank shaft m is journaled in the three brackets named. Four cranks n and pedals n' are secured to this shaft,—the two on one side being for the use of one rider; the two on the other side for the use of the other rider.

Secured to the back bone is a support for a third saddle p' on which a single rider may sit and drive the machine by means of the two inner pedals.

A separate saddle P is secured to each seat post, and if the riders are of approximately the same weight the connection may be made in the ordinary manner and with the ordinary means.

It will be observed that with the above described construction both riders may mount to the seats as readily and in substantially the same manner as a lady mounts a lady's safety, and without having to climb over and between parts of the frame as is common with ordinary tricycles, and with all sociable tricycles heretofore constructed. When riding, both riders are outside the wheels, instead of between them as heretofore they have been. There is of course very little danger that any tricycle will tip over, but if that hereinbefore described should tend so to do, one rider would be thrown off outside of the wheels, whereupon the weight of the other rider would tip the machine in the other direction whereby he could dismount without getting tangled up between the wheels or with the frame.

In tricycles as heretofore constructed difficulty is encountered in safely making sharp turns when going rapidly, because there has been no transverse inclination of the machine as there is with bicycles; and consequently the centrifugal force tends to throw the rider and capsize the machine. In the construction shown in the drawings the entire machine is automatically inclined by the turning of the fork heads in their sleeves to steer the machine; and the machine inclines in the direction toward which the turn is being made. This result is secured by the following construction. Both forks are off set toward the center from their respective fork heads. The steering heads are inclined from the perpendicular. The axle of each steering wheel is so placed that when the planes of both steering wheels are parallel to the plane of the rear wheel, that is to say, when the wheels are in position to steer the machine straight ahead, the axles of the front wheels are horizontal and the wheels are upright. But when either fork head is turned in its sleeve, the wheel axle, because of the inclination of the axis of the steering head, becomes inclined to the horizontal position, and the wheels incline and the frame is tipped in consequence thereof. In turning the left wheel to the left, the left side of the frame is lowered. In turning the right wheel to the left, the right side of the frame is raised. In turning the said wheels in opposite directions, the right side of the frame is lowered and the left side raised. In the first case the wheels incline from their upright position to the left, in the latter case to the right. In both cases the rear wheel is inclined by the tipping of the frame.

In order to compel both steering wheels to be simultaneously turned in the same direction, an arm b^2 is rigidly attached to each fork head, and these arms are connected by a rigid bar s. Each fork head is surmounted by handle bars in substantially the manner common to safety bicycles.

In order to so arrange the saddles that the weight of the rider on one saddle shall balance the weight of the rider on the other saddle whatever be the relative weights of said riders, I make the saddles transversely adjustable. To secure this result, I connect one or both saddles to the upper end of its tube by means of a device which permits of the movement of the saddles about two independent and approximately vertical pivots. As for example as shown, the seat post may be revolved in its socket in the tube e' thereby carrying the saddle away from or toward the longitudinal center line of the machine; and the saddle clamp t may turn upon a pivot on the horizontal arm of the seat post so as to bring the longitudinal axis of the saddle into position parallel with the longitudinal center line of the machine.

Having thus described my invention, I claim—

1. In a tricycle, in combination, the two front steering wheels, a rear driving wheel behind and midway between the front wheels, and two seat supporting members of the frame which lie wholly behind the front wheels and on opposite sides of the rear driving wheel, substantially as and for the purpose specified.

2. In a tricycle, in combination, a frame, having two front steering sleeves which are inclined to the perpendicular, two fork-heads journaled in said sleeves, two forks secured to the lower ends of said fork-heads respectively and offset toward the central line of the machine, wheels journaled in said forks, and a rear wheel journaled to said frame behind and midway between said front wheels, substantially as and for the purpose specified.

3. In a tricycle, in combination, a frame, two front steering wheels, a rear wheel journaled to said frame behind and midway between the front wheels, two seat supporting members of the frame adjacent to and on opposite sides of the rear wheel, two saddles supported by said members, and means for transversely adjusting the position of said saddles with respect to the central line of the machine, substantially as and for the purpose specified.

4. In a tricycle, in combination, a frame, two front steering wheels, a rear wheel jour-

naled to said frame behind and midway between the front wheels, two seat supporting members of the frame adjacent to and on opposite sides of the rear wheel, two saddles, and mechanism connecting said saddles to the seat supporting members and having two substantially vertical pivots whereby the position of said saddles is transversely adjustable, substantially as and for the purpose specified.

5. In a tricycle, the combination of two rigidly connected front steering sleeves, front steering forks journaled in said sleeves, and wheels mounted in said forks, with a drop frame secured at its front end to the two steering sleeves and terminating at its rear end and in a rear fork which is midway between the planes of the front steering wheels, a rear driving wheel mounted in said rear fork, a crank shaft mounted on the frame between the front and rear wheels, suitable mechanism connecting said crank shaft with the rear wheel, and two seat supporting posts rigidly secured to the frame, behind the front wheels and on opposite sides of the rear wheel, substantially as and for the purpose specified.

6. In a tricycle, the combination of a drop frame, two front steering wheels, a rear fork midway between the planes of the front wheels, a driving wheel mounted thereon, two seat supporting posts behind the front wheels respectively and on opposite sides of the rear wheel, a seat support near the front edge of the rear wheel in a plane midway between the planes of the front wheels, a crank shaft, four pedals secured thereto and mechanism connecting said crank shaft with the rear wheel, substantially as and for the purpose specified.

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

HERMAN MATZEN.

Witnesses:
E. L. THURSTON,
M. S. INGHAM.