

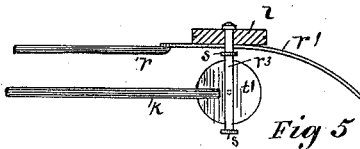
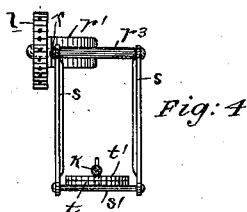
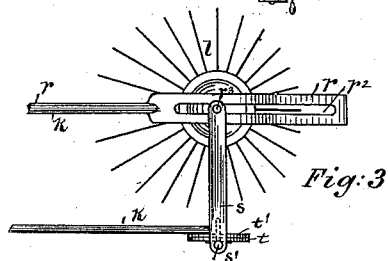
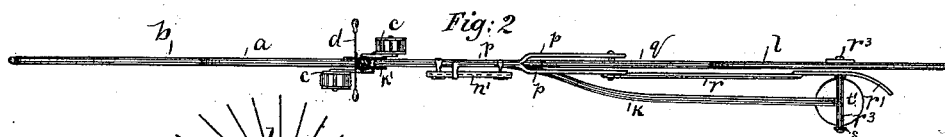
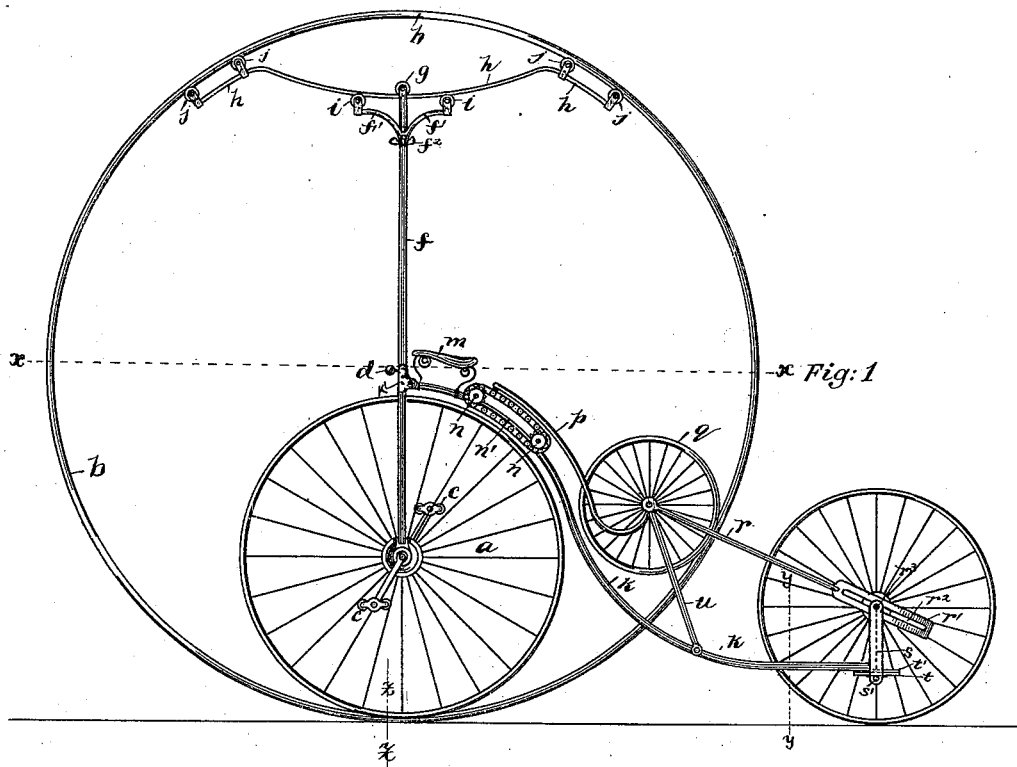
(No Model.)

2 Sheets—Sheet 1.

S. GARWOOD.
VELOCIPÈDE.

No. 418,611.

Patented Dec. 31, 1889.



WITNESSES:

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(No Model.)

2 Sheets—Sheet 2.

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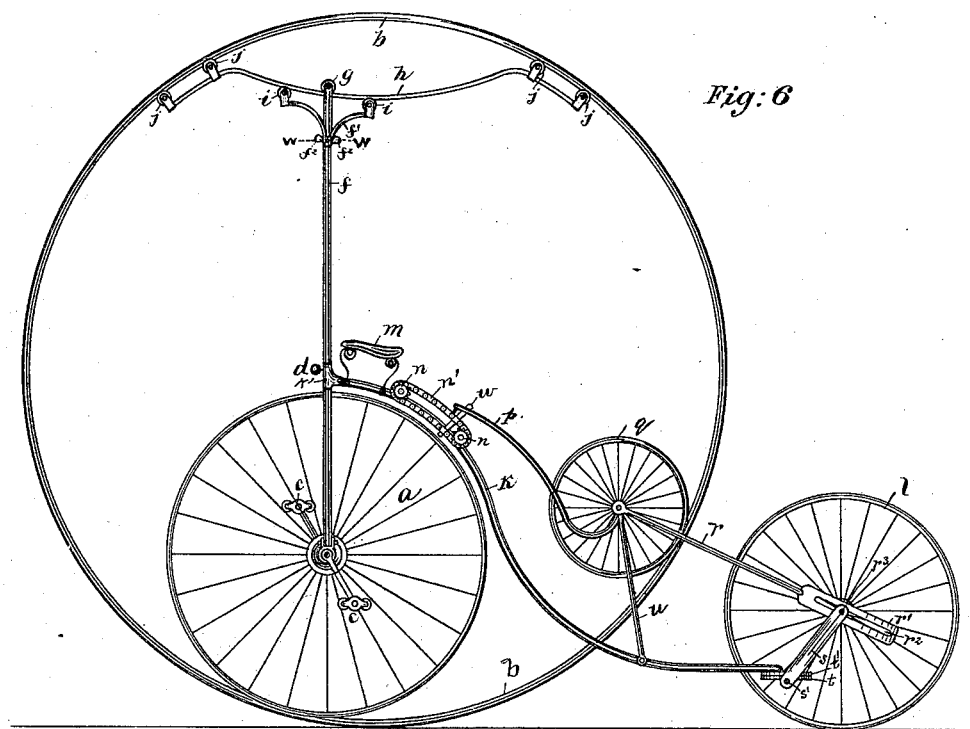


Fig. 6

Fig. 7.

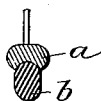


Fig. 8.



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UNITED STATES PATENT OFFICE.

SPENCER GARWOOD, OF MILFORD CENTRE, OHIO.

VELOCIPEDÉ.

SPECIFICATION forming part of Letters Patent No. 418,611, dated December 31, 1889.

Application filed September 25, 1889. Serial No. 325,064. (No model.)

To all whom it may concern:

Be it known that I, SPENCER GARWOOD, a citizen of the United States, residing at Milford Centre, in the county of Union and State of Ohio, have invented a certain new and useful Improvement in Velocipedes, of which the following is a specification.

My invention relates to the improvement of velocipedes; and the objects of my invention are to so mount one or more of the wheels of a velocipede within a large metallic ring as to provide for said velocipede an endless track which will contribute ease to the rider; to so construct and combine the same as to admit of the machine being propelled by the expenditure of but slight labor on the part of the rider; to provide, in connection with said endless track or ring and the front wheel of the velocipede, a suitable frictional support for the latter; to so connect a rear ground-wheel with the backbone of the velocipede as to admit both of the ordinary rotary motion of said ground-wheel on its shaft and of a sufficient lateral rotation to allow for a change of direction to the right or left, and to accomplish these objects in a simple and inexpensive manner. These objects I accomplish in the manner illustrated in the accompanying drawings, in which—

Figure 1 is a side elevation of my improved machine when the same is at rest. Fig. 2 is a plan view taken on section-line *xx* of Fig. 1. Fig. 3 is a side elevation in detail of the ground-wheel connection with the backbone. Fig. 4 is a view of the same, taken on line *yy* of Fig. 1. Fig. 5 is a plan view of the same. Fig. 6 is a side elevation of my machine, showing the position of parts when the same is in motion. Fig. 7 is an enlarged sectional view in detail, taken on line *zz* of Fig. 1, and Fig. 8 is an enlarged sectional view of the track-rod supports, taken on line *ww* of Fig. 1.

Similar letters refer to similar parts throughout the several views.

As shown in the accompanying drawings, my invention consists, briefly, in the employment of a large ring as an endless track for the forward wheel of a velocipede, and in the peculiar means of supporting and running said wheel therein.

a represents the forward wheel of a veloci-

pede or bicycle, the rim of said wheel being provided with a peripheral and circumferential groove, within which is made to bear the inner side of a large track-ring *b*. This track-ring preferably consists of a metallic ring of such diameter as to conveniently inclose the body of a man seated in the usual manner upon the wheel *a*.

The wheel *a* may be provided, as shown at *c*, with any well-known form of extensible pedals, and its change of direction is effected in the usual manner through the motion of the handle-bar *d*.

From a socket-piece *k'*, resting upon the usual standards or fork and hinged to the forward end of the backbone *k*, from which it extends vertically upward to within a short distance of the inner side of the ring *b*, is a guide or supporting rod *f*. The upper end of this rod is divided or slotted, as shown. Within this slot, or between the upper extremities of the divided portions of said support, is pivotally supported a small guide or track wheel *g*, which is adapted, as hereinafter described, to be made to travel upon a transverse track-rod *h*.

f' represents an approximately V-shaped roller-support, which is pivoted at its center to the rod *f* a short distance below the upper end thereof. The arms of this support *f'* are bent outwardly on opposite sides of the rod *f* and are made to support on each of their ends a friction-roller *i*. These rollers *i* are adapted to bear and run, as shown, against the under side of the transverse track-rod *h*. The ends of the track-rod *h* are bent downwardly in lines parallel with and in close proximity to the ring *b*, said downwardly-bent ends being provided with grooved friction wheels or rollers *j*, which are supported in contact with the inner side of said ring *b* through the pressure of the rollers *i* upon the track *h*. Lugs *f*², formed with and projecting from opposite sides of the rod *f*, limit the movement of the roller-support *f'*.

k represents the backbone of the velocipede, which is approximately of the usual form of a bicycle-backbone, and which is connected in the usual manner with the front-wheel fork or standards. The rear end of the backbone is connected, in the manner hereinafter described, with the rear ground-wheel *l*.

Pivotaly mounted upon pins made to project from one side of the backbone near its forward end, and beneath or in close proximity to the seat *m*, are two small sprocket-wheels *n*. These sprocket-wheels are located a comparatively short distance from each other and are connected by a sprocket chain or belt *n'*. Rigidly connected with the upper side of the sprocket-chain at the desired point thereon is the upper end of a rod or second and shorter backbone *p*. This backbone *p* runs downward a short distance above and in a line parallel with the backbone *k* and terminates within the ring *b* in an upward curve, as shown. This lower and rear end of the backbone *p* is pivoted upon the short axle of a small lock-wheel *q*, the periphery of which is grooved to receive the inner surface of the ring *b*, upon which it runs. The wheel *q* is, as shown, supported at a higher point in the ring *b* than the wheel *a*, although the peripheries of the two wheels would be in close proximity when the machine is at rest, as shown in Fig. 1 of the drawings.

The ground-wheel *l*, which, as shown, bears upon the ground slightly in rear of the ring *b*, is connected with the lock-wheel *q* by means of a connecting-rod *r*. The forward end of this rod is pivotaly connected with the axle of the wheel *q* adjoining the connection of the backbone *p*, while its rear portion terminates in an elongated plate *r'*, in which is formed a longitudinal central slot *r²*. The rear half of the plate *r'* is curved outwardly, as shown.

The axle *r³* of the ground-wheel is extended outwardly on that side of said wheel corresponding with the side of the wheel *q* on which the forward connection of the rod *r* is made. This outwardly-projecting portion of the axle *r³* passes loosely through and extends beyond the slot *r²* of the plate *r'*, and pivotaly supports on the outer side of said plate, at a short distance from each other, the upper ends of two downwardly-extending arms *s*. The arms *s* have their lower ends connected, as shown, by a transverse bar or rod *s'*, upon which is mounted between the arms *s* a turn-table consisting of a metallic disk *t*, secured upon said cross-bar *s'*, and an upper disk *t'*, resting and pivoted centrally upon said disk *t*. To the upper side of the upper disk of the turn-table is rigidly secured the rear end of the backbone *k*.

A brace *u* has its lower end pivoted to one side of the backbone *k* and its remaining end pivotaly connected with the axle of the lock-wheel *q*.

The operation of my device is as follows: The supporting-rod *f* and the center of the forward wheel *a* being in vertical alignment with the center of the ring *b*, and the point of connection between the backbone *p* and the sprocket-chain *n'* being near the forward sprocket-wheel, as shown in Fig. 1 of the drawings, the rider takes his position in the usual manner upon the seat *m*, his feet resting upon the pedals *c*. He then imparts mo-

tion to the wheel *a* in the usual manner. This forward movement of the wheel *a* will cause a corresponding movement of the vertical support *f*, the guide-rollers of the latter running upon and against the track-rod *h*, which conforms to the curve of the ring *b*. The center of the wheel *a* having passed out of vertical alignment with the center of the ring *b* to the position shown in Fig. 6 of the drawings, it will be seen that a sufficient leverage upon the ring *b* will have been gained to impart a forward rotary motion to said ring. The forward motion of the wheel *a* will also operate through the backbone *k* to draw forward the rear turn-table arms *s* and lower end of the brace *u*. The brace *u* and connecting-rod *r* will operate to slightly elevate the lock-wheel *q* above its original position, which will result, owing to the connection of the backbone *p* and chain *n'*, in the latter being turned over its sprocket-wheels by the consequent downward pull of the former. In this manner the distance between the wheels *a* and *q* will be increased, in which relative position they may be held by inserting between two opposite links of the chain a locking-pin *w* or other locking device, as shown in Fig. 6 of the drawings. The wheel *q* being thus made to bear and run against the outer ring at a distance from the wheel *a*, it will be seen that the former will operate as a brace or lock and assist in insuring the latter in its position.

It will be seen that during the rotary movement imparted, as above described, to the track-ring *b* the inner surface of the latter will run against the rollers *j*, and thus prevent the curved track-rod *h* from changing its relative position with the track-rail.

Owing to the herein-described pivotal connection of the main backbone and the ground-wheel, it will be seen that the ground-wheel will be allowed such rotary or pivotal motion on a vertical axis as may be made necessary by the change of direction of the front wheel. During this movement the upper turn-table disk *t'* bears and turns upon the lower disk *t*. The curved and slotted axle-bearing plate *r'* will afford the axle *r³* such play as may be necessary in changing the direction of the wheel, while the pivoted arms *s* will admit of the forward movement of the backbone *k* occasioned in starting the front wheel.

From the construction and operation herein shown and described it will be seen that the forward or riding wheel will be provided with an endless track, which, as will readily be seen, will operate to remove the jar common to wheels running upon the ground and imparting to the front wheel a steadiness of motion which could not be attained on the ordinary street or roadway.

Another important feature of my invention lies in the fact that, the forward wheel *a* having reached such point on the track-ring *b* as to create a leverage thereon and impart motion thereto, the weight of the rider upon said

forward wheel, being thus transferred to a point past the center of the ring *b*, will, in connection with the bracing power of the lock-wheel, greatly assist in retaining said forward wheel in this position on the ring, thus making the operation of the machine comparatively easy.

The support *f*, in conjunction with the track-rod *h*, will serve to insure the riding-wheel and balance-wheel in their positions by affording the same an upper bearing on the ring.

I am aware that monocytes and other machines have been patented wherein one or more wheels have been mounted within a comparatively large circular track; but these devices differ from that herein shown and described in many points of construction.

The slot of the plate *r'* is of such length as to limit the forward movement of the ground-wheel axle sufficiently to prevent the contact of the ground-wheel and ring *b*.

Having now fully described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In a velocipede, the combination, with a large track-ring *b*, of a bicycle having its forward wheel grooved and running within the ring *b* and having its rear wheel resting and running upon the ground, a vertical supporting-rod *f*, connected with the backbone, and the transverse track-rod *h*, against and upon which the support *f* is frictionally supported, said track-rod having frictional bearings against the inner surface of the track-ring, substantially as and for the purpose set forth.

2. In a velocipede, the combination of a large track-ring *b*, a bicycle having its forward wheel grooved and running within said outer ring and having its rear wheel running upon the ground, sprocket-wheels *n*, pivoted to the main backbone *k* and connected by chain belt *n'* with the small lock-wheel *q*, backbone *p*, connecting lock-wheel *q* and chain belt *n'*, and pivoted brace *u*, connecting, as described, wheel *q* and main backbone *k*, substantially as set forth.

3. In a velocipede, the combination of a large track-ring *b*, a bicycle having its forward wheel grooved and running within the outer ring *b*, the main backbone *k*, sprocket-wheels *n*, pivoted thereto, chain belt *n'*, connecting the same, grooved lock-wheel *q*, bearing and running within the ring *b*, backbone *p*, connecting, as described, the chain *n'* and wheel *q*, rear ground-wheel *l*, having its axle extended on one side, rod *r*, connecting wheels *q* and *l* and having slotted and curved axle-bearing plate *r'*, arms *s*, depending from said axle-extension and supporting, as described, the lower disk of a turn-table, upon which is pivotally mounted an upper disk, the latter rigidly connected with the rear end of the main backbone, and the pivoted brace-rod *u*, connecting wheels *q* and backbone *k*, substantially as and for the purpose set forth.

SPENCER GARWOOD.

In presence of—

C. C. SHEPHERD,
BARTON GRIFFITH.