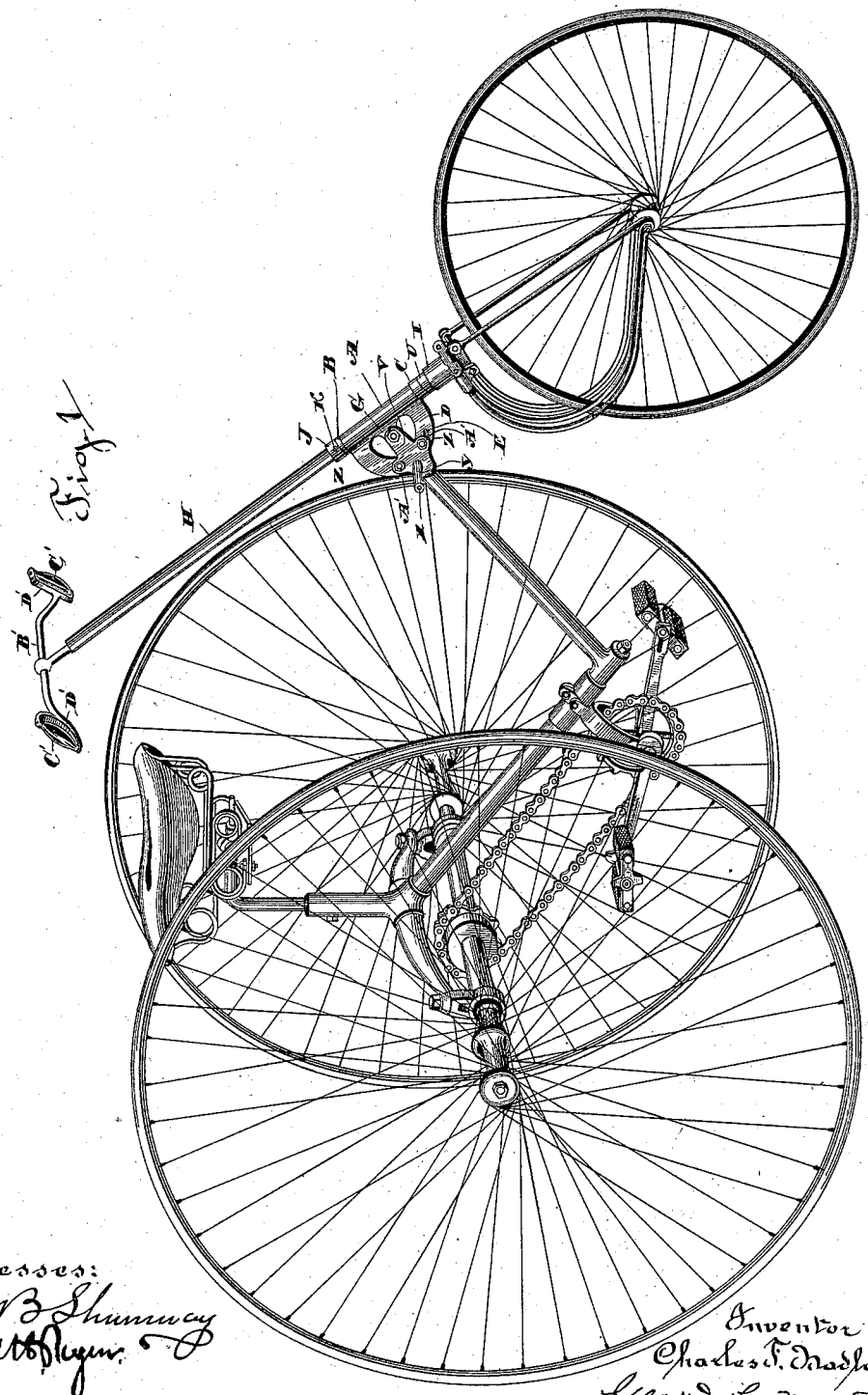
(No Model.)

4 Sheets—Sheet 1.

C. F. HADLEY.

VELOCIPEDE.

No. 385,350. Patented July 3, 1888.



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(No Model.) 4 Sheets—Sheet 2.

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VELOCIPEDE.

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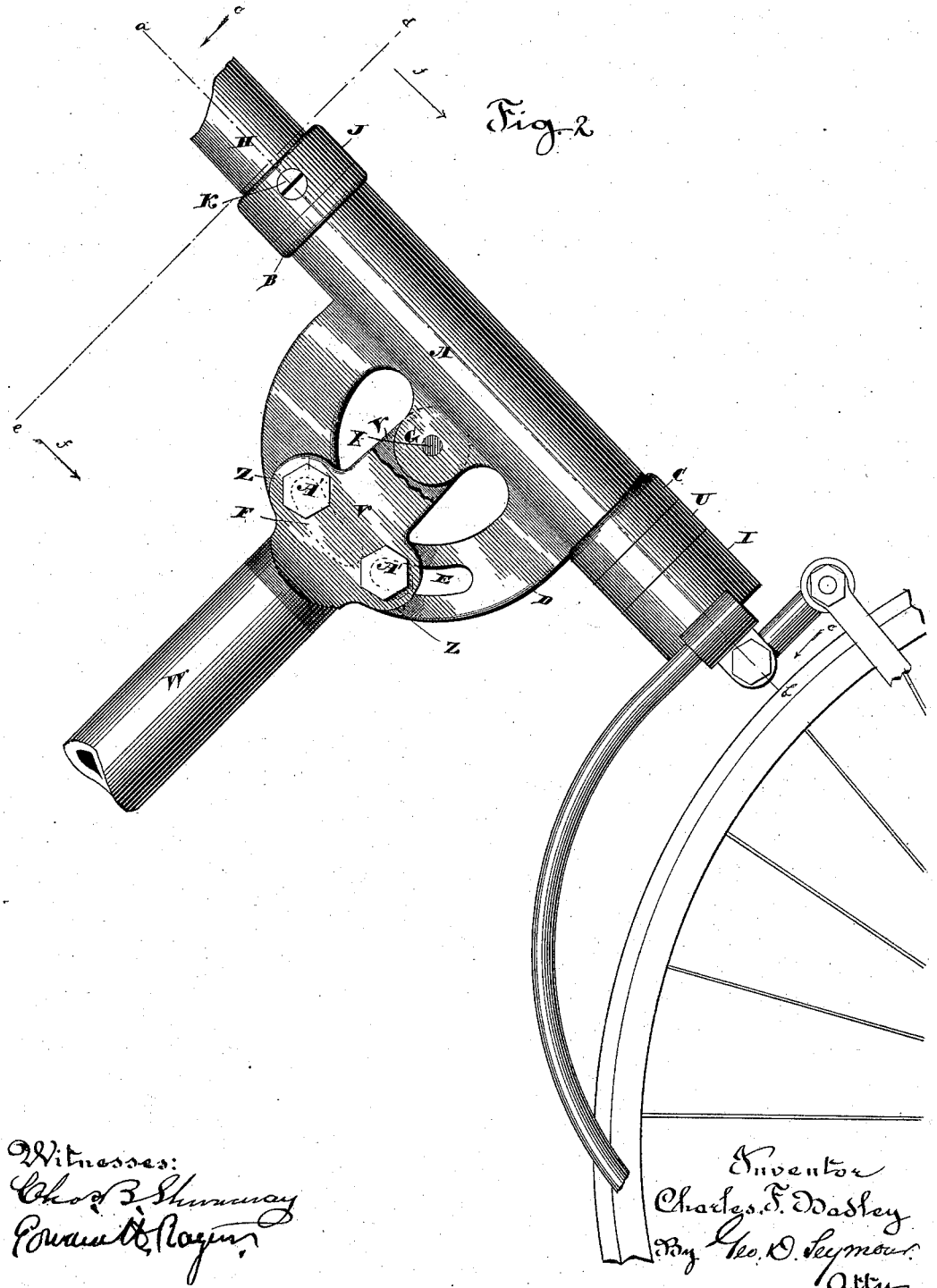

Fig. 2

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VELOCIPEDE.

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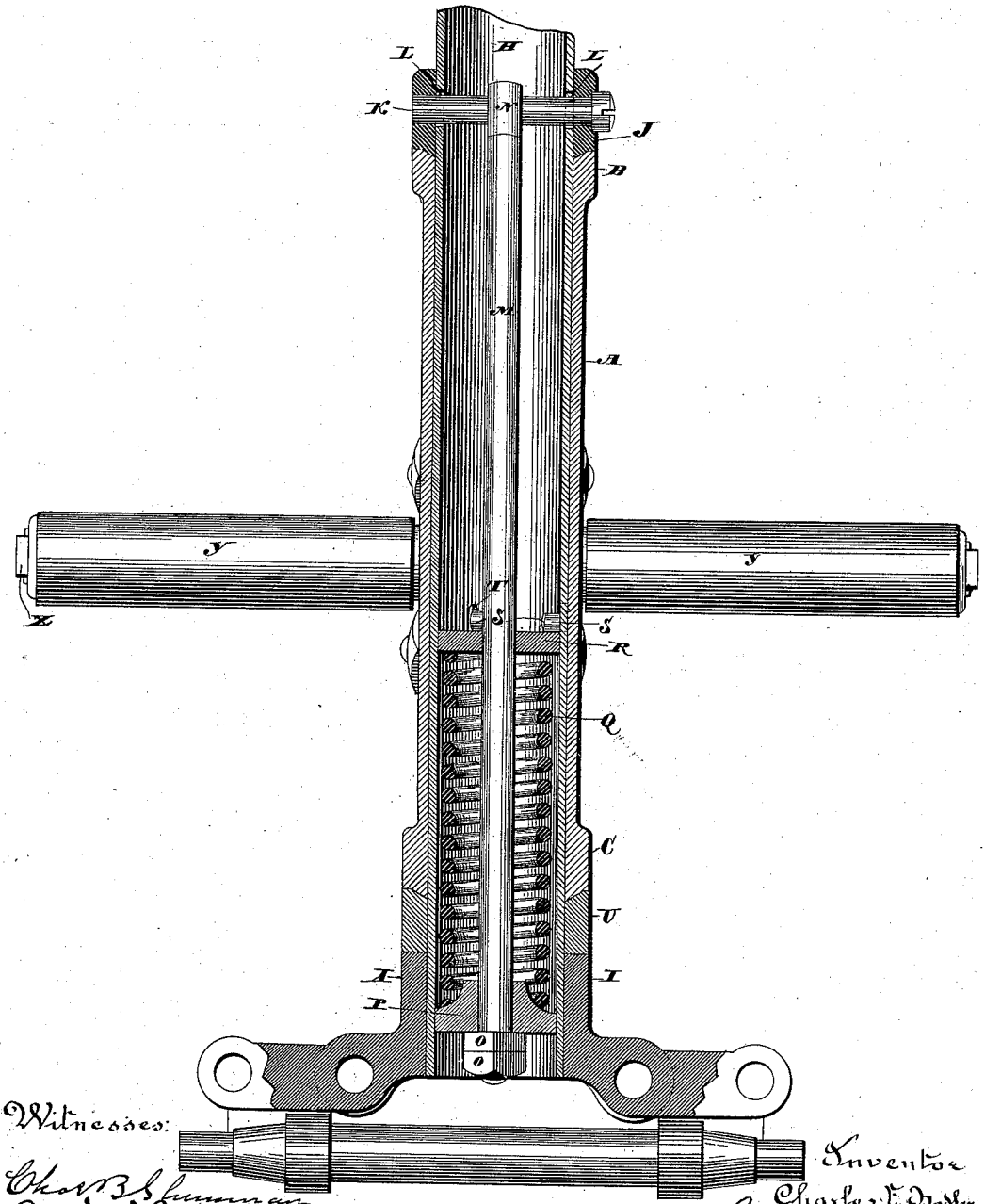
Fig. 3



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No. 385,350. Patented July 3, 1888.

Fig. 4

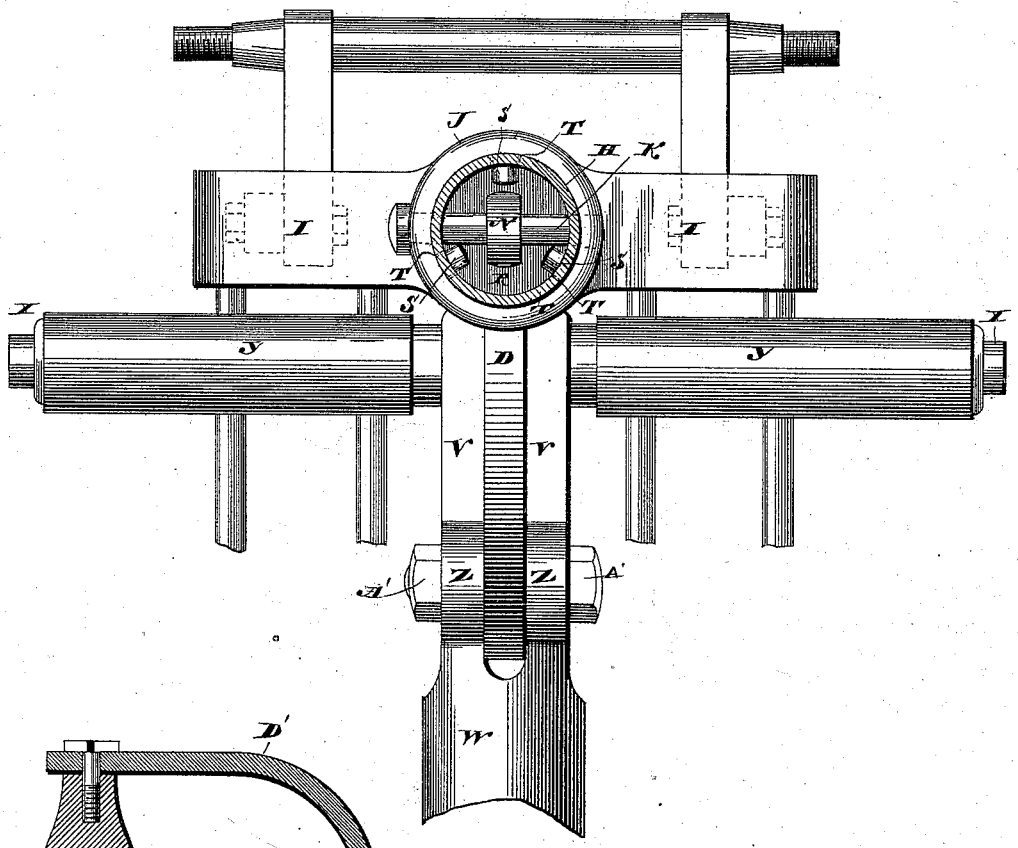


Fig. 5

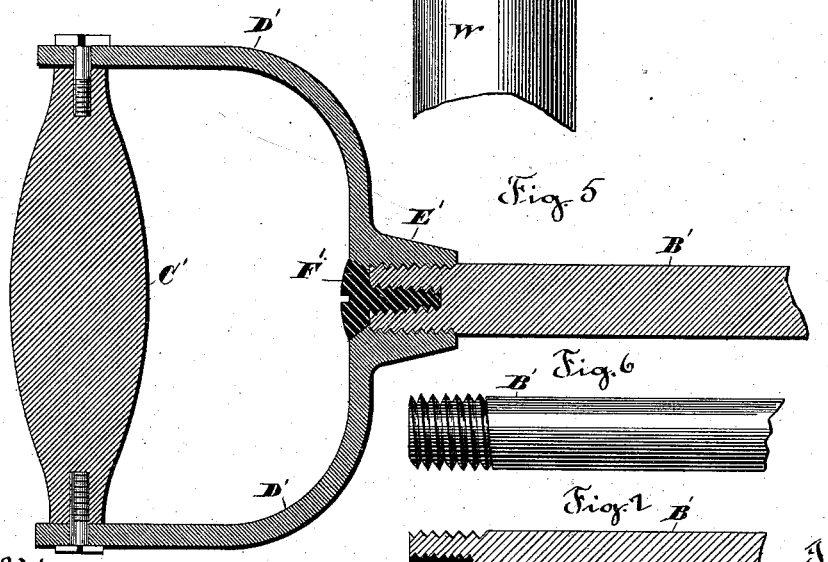
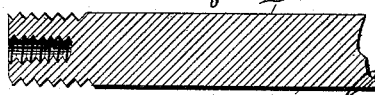


Fig. 6

Fig. 7



Witnesses:
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UNITED STATES PATENT OFFICE.

CHARLES F. HADLEY, OF CHICOPEE, ASSIGNOR TO THE OVERMAN WHEEL COMPANY, OF BOSTON, MASSACHUSETTS.

VELOCIPEDE.

SPECIFICATION forming part of Letters Patent No. 385,350, dated July 3, 1888.

Application filed September 8, 1887. Serial No. 249,066. (No model.)

To all whom it may concern:

Be it known that I, CHARLES F. HADLEY, residing at Chicopee, in the county of Hampden and State of Massachusetts, have invented certain new and useful Improvements in Steering Apparatus for Velocipedes; and I do declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, which form a part of this specification.

My invention relates to an improvement in steering apparatus for velocipedes, the object being to produce a steering-head of simple, compact, and durable construction, adapted to automatically compensate for wear upon its bearings, and to permit the steering-rod to be rocked for convenience in mounting and dismounting the vehicle, and for temporarily reducing the base thereof.

A further object of my invention is to produce an improved construction for coupling spade-handles to the handle-bar, whereby stiffness and strength are secured.

With these ends in view my invention consists in the combination, with a sleeve connected with the frame of the vehicle, of a steering-rod entering such sleeve, bearings between such rod and sleeve, and a spring located within the rod and sleeve and pulling their bearings together.

My invention further consists in the combination of a handle-bar having its ends exteriorly threaded in one direction and interiorly threaded in an opposite direction, a handle-frame having a sleeve interiorly threaded to correspond to the exterior threading of the bar, and a screw passing through the handle-frame concentric with the sleeve and entering the end of the bar and threaded to correspond to the interior threading thereof.

My invention further consists in certain details of construction and combinations of parts, as will be hereinafter described, and pointed out in the claims.

In the accompanying drawings, Figure 1 is a view in perspective of one form which a vehicle embodying my improved steering-head may assume. Fig. 2 is a detached broken view in side elevation of the steering-head. Fig. 3 is a similar sectional view thereof on the line *a b* of Fig. 2, and looking in the direction of the arrows *c c* thereon. Fig. 4 is a similar view of the head, partly in plan and partly in section, on the line *d e* of Fig. 2, and looking in the direction of the arrows *f f*, which also represent the line on which the plan is taken. Fig. 5 is a sectional view showing my improved construction of spade-handle and handle-bar. Fig. 6 is a detached view in elevation of one end of the handle-bar, showing its exterior threading, and Fig. 7 is a view thereof in section showing its interior threading.

As herein shown, the steering-head consists, in part, of a short sleeve, A, provided at its upper end with a bearing, B, at its lower end with a bearing, C, with a semicircular extension, D, having slots E and F, and with a perforated lug, G, situated in the center of such extension, which is located upon the lower face of the sleeve.

An inclined tubular steering-rod, H, is entered at its lower end into such sleeve, in which it turns, its extreme lower end being rigidly connected with the head I, attached to the steering-wheel in any approved manner.

A bearing-collar, J, co-operating with the upper bearing, B, of the sleeve, is movably mounted upon the rod at a point just above where the same enters the sleeve. A bolt, K, mounted in such collar, extends transversely through the rod, which is thereto provided with slots L L, elongated to permit the collar to be moved upon the rod. A coupler, consisting of a rod, M, located within and extending lengthwise of the rod H, is provided at its upper end with an eye, N, through which the bolt aforesaid passes, being threaded at its lower end to receive nuts O O, supporting a perforated follower, P, located within the rod and upon the coupler. A stiff spiral spring, Q, inclosed by the rod and encircling the coupler aforesaid, is supported by and pushes against the said follower, its upper end abutting against a spring stop or head, R, consisting of a disk perforated for the passage of the coupler through it, and held in the rod against upward movement by three screws, S S S, mounted in the sleeve and extending into the rod H through slots T T T formed therein and elongated so

as to permit the sleeve to slip over the said rod. The tension of the said spring is regulated by the nuts O O, which are adjusted to compress or relax the spring Q and so secure a stiff or free turning action in the steering-rod, as may be desired. A bearing-collar, U, co-operating with the lower bearing, C, of the sleeve, is mounted upon and turns with the wheel-head I before mentioned.

Under the described construction the movable collar and the sleeve have an endwise movement over the rod within the range of the slots formed therein, the spiral spring acting from the spring-stop as a fulcrum, pushing against the follower and exerting a constant effort to pull the collar J over the rod H and down upon the bearing B of the sleeve, and the sleeve over the rod and down upon the collar U of the head I.

The described action of the spring keeps the bearings together and automatically compensates for any wear in them.

Perforated parallel arms V V, projecting from the forward end of the backbone W of the machine-frame, embrace the extension D and the lug G of the sleeve. A spindle, X, passing through the perforations of the said arms and the lug, forms a fulcrum on which the rod is rocked with reference to the machine-frame. Rubber sleeves Y Y, located upon the respective projecting ends of such spindle, cover them for rests for the feet.

Perforated lugs Z Z, respectively located upon the opposite faces of the said arms, receive bolts A′ A′, passing through the respective segmental slots in the extension of the sleeve, and by engaging with the ends of the slots limit the rocking of the rod and steering-head with reference to the machine-frame. Furthermore, by tightening the bolts the rod and head may be fixed to the frame at any angle within the range of the slots. The upper end of the rod carries a handle-bar, B′, having its ends exteriorly and interiorly threaded in opposite directions. Spade-handles mounted on the ends of this bar consist of a grip, C′, and a frame, D′, having an open sleeve, E′, interiorly threaded to correspond with the exterior threading of the ends of the bar. A screw, F′, passing through the inner end of the sleeve, with which it is concentric, into the end of the bar, is threaded to correspond therewith. It will thus be seen that two couplings are made between the handle and bar and these by screw-threads running in opposite directions. This secures a very strong and stiff connection between the bar and handle.

My improved steering-head is very compact and strong, well calculated to exclude dust, and automatically compensates in a very perfect manner for wear. The tilting or rocking feature enables the rod to be lifted out of the way for mounting or dismounting the machine from the front, and so renders the vehicle particularly convenient for ladies. By lifting the rod also when the machine is in motion its base may be greatly reduced, whereby the vehicle may be handled in less room to obvious advantage.

The described construction of handle and handle-bar is obviously applicable to bicycles and other forms of velocipedes, as well as to tricycles.

I would have it understood that I do not limit myself to the exact construction shown and described, but hold myself at liberty to make such changes and alterations as fairly fall within the spirit and scope of my invention.

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

1. In a velocipede, the combination, with a sleeve connected with the frame of the vehicle, of a tubular steering-rod entering such sleeve, bearings between the sleeve and rod, and a spring located within the rod and adapted to pull the bearings of the sleeve and rod together, substantially as set forth.

2. In a velocipede, the combination, with a sleeve connected with the frame of the vehicle and provided with bearings at its upper and lower ends, of a steering-rod entering such sleeve, a collar loosely mounted on the rod and co-operating with the upper bearing of the sleeve, a head connected with the steering-wheel and having the lower end of the rod attached to it, a bearing co-operating with the lower bearing of the sleeve carried by such head, and a spring located within the rod and pulling the said bearings together, substantially as set forth.

3. In a velocipede, the combination, with a sleeve connected with the frame of the vehicle, of a steering-rod turning in such sleeve, a movable bearing for the upper end of the sleeve, a coupler located within the rod and connected with such bearing, a follower carried by the lower end of the coupler, a spring-stop located in the rod and coupled with the sleeve so as to permit the same to slide over the rod, a spring located within the rod and interposed between the said follower and stop, a wheel-head to which the lower end of the rod is attached, and a bearing carried by such head for the lower end of the sleeve, substantially as set forth.

4. In a velocipede, the combination, with a sleeve connected with the frame of the vehicle and provided with a bearing at its upper and at its lower end, of a steering-rod turning in such sleeve, a bearing-collar for the upper bearing of the sleeve loosely mounted on the rod, a bolt passing through such collar and through elongated slots in the rod, a coupler located in the rod and having an eye in its upper end through which the bolt passes, and a spring located in the rod and pulling such coupler down to pull the movable collar down onto its bearing, substantially as set forth.

5. In a velocipede, the combination, with a sleeve connected with the frame of the vehicle and having a bearing at its upper end and at its lower end, of a steering-rod entering such sleeve and turning therein, a movable collar

co-operating with the upper bearing of the sleeve and embracing the rod, a bolt carried by such collar and extending transversely through the rod thereto provided with elongated openings, a coupler located in the rod and extending lengthwise thereof and provided at its upper end with an eye receiving the said bolt, and at its lower end with a follower, a spiral spring supported by such follower and encircling the coupler, a spring-stop located in the rod and coupled with the sleeve, a wheel-head to which the rod is attached, and a bearing carried by such head and co-operating with the lower bearing of the sleeve, substantially as set forth.

6. In a velocipede, the combination, with a sleeve connected with the frame of the vehicle and provided with a bearing at its upper end and at its lower end, of a steering-rod turning in such a sleeve, a coupler connected with such movable bearing, a spring-stop consisting of a disk coupled with the sleeve by screws passing through elongated openings in the rod in which the coupler is located, and a spring located in the rod and pushing from the stop to pull the movable collar and sleeve down over the rod, substantially as set forth.

7. In a velocipede, the combination, with a sleeve connected with the vehicle-frame, of a steering-rod turning in such sleeve, a spring located in the rod and pulling the said bearings together, and means for adjusting the tension of the spring, substantially as set forth.

8. In a velocipede, the combination, with a steering-rod, of a sleeve receiving the lower end of the rod and provided upon its lower face with an extension having segmental slots, and with a perforated lug, two parallel perforated arms extending forward from the machine-frame and embracing such extension and lug, and means for coupling the said extension, lug, and arms together, substantially as set forth.

9. In a velocipede, the combination, with a steering-rod, of a sleeve receiving the lower end of the steering-rod and provided upon its lower face with a perforated lug, perforated arms extending forward from the machine-frame, a spindle passing through such arms and lug and forming a fulcrum and a foot-rest, and means for limiting the pivotal action of the sleeve and arms on the spindle, substantially as set forth.

10. In a velocipede, the combination, with a handle-bar having its ends exteriorly threaded in one direction and interiorly threaded in an opposite direction, of a handle-frame having a sleeve interiorly threaded to correspond to the exterior threading of the bar, and a screw passing through the handle-frame concentric with the sleeve and entering the end of the bar and threaded to correspond to the interior threading thereof, substantially as set forth.

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

CHARLES F. HADLEY.

Witnesses:
LUTHER WHITE,
C. J. DRISCOLL.