(No Model.)

T. HUMBER.

VELOCIPEDE.

No. 352,090. Patented Nov. 2, 1886.

Fig. 1.

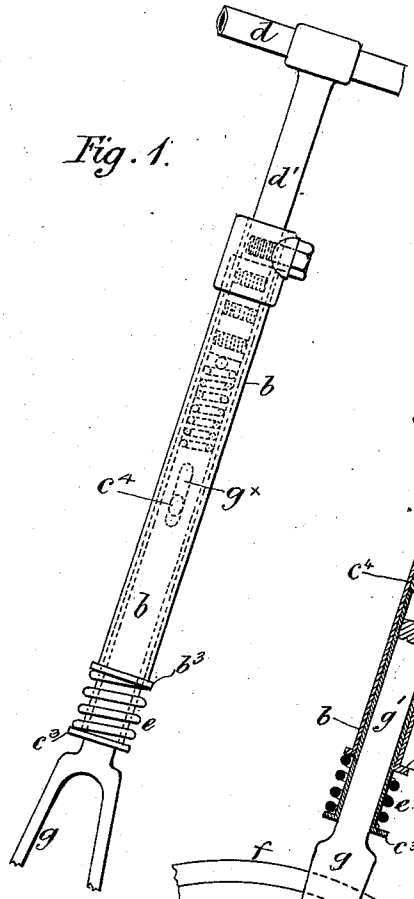


Fig. 2.

Fig. 3.

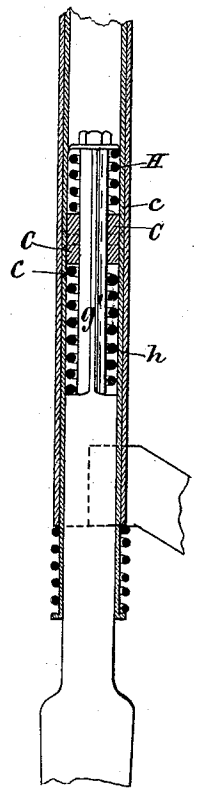
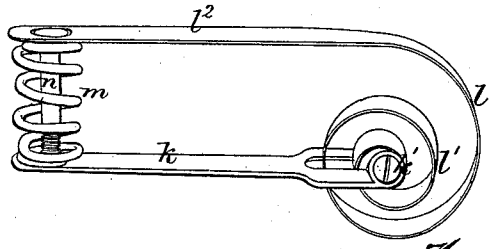


Fig. 4.



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VELOCIPEDE.

SPECIFICATION forming part of Letters Patent No. 352,090, dated November 2, 1886.

Application filed February 26, 1886. Serial No. 193,331. (No model.)

To all whom it may concern:

Be it known that I, THOMAS HUMBER, a subject of the Queen of Great Britain, residing at Beeston, in the county of Nottingham, England, cycle-manufacturer and machinist, have invented certain new and useful Improvements in Tricyles and like Vehicles, of which the following is a specification.

My invention relates, first, to improvements in tricycles, &c., of the class provided with a spring in connection with the steering-wheel in such manner as to prevent the jarring of the wheel on the road being communicated to the steering-handle by which the position of the wheel is controlled, and also provided with automatic steering-gear in which a spring is applied, tending constantly to place the steering-wheel in the position for straight running.

The arrangement as adapted to an automatic front-steerer is as follows: At the fore part of the frame an inclined tube is carried. It receives within it another tube, to which, at its upper end, the steering cross head or handle is secured. On the inner tube there is also a cam or inclined block, which, as heretofore in automatic steering-gear, works in conjunction with a corresponding fixed cam or inclined block which is secured at the upper end of the outer tube. The inner tube projects at its lower end from the outer tube, and a spring is interposed between the two. It abuts against flanges on each. This spring is the automatic steering-spring. It draws down the inner tube, holds the two cams or inclined blocks in contact, and when permitted to do so places the steering-handle for direct progress. The stem of the fork carrying the steering-wheel enters the inner tube, and it abuts at its upper end upon a coiled spring contained within the tube. The load is transmitted to the steering-wheel through this spring, and the spring plays as the wheel passes over inequalities in the road. The steering-handle when turned carries the wheel round with it by means of a key which passes through the stem of the wheel-fork, and projects so that its ends enter slotted holes in the inner tube, to which the handle is attached.

My improvements also relate to the seat. To carry the seat I employ the following spring mechanism: It consists of a short base-plate or bar clamped to the frame of the vehicle. The base-plate has a joint at one end, and a spring-blade is connected with it by this joint. The spring is coiled around the joint in two complete open coils, and it then projects horizontally over the top of the base-plate and parallel to it. At the end distant from the joint the spring-blade is connected with the base-plate by a bolt, which allows play within limits. There is a helical spring surrounding the bolt and between the base-plate and the spring-blade. It supports the spring-blade, and on this latter the seat is secured by clips. The position of the seat on the blade admits of adjustment, as does also the position in which the base-plate is clipped onto the frame of the tricycle or vehicle.

In order that my said invention may be most fully understood and readily carried into effect, I will proceed to describe the drawings hereunto annexed preparatory to a specific designation of the subject-matter claimed.

In the drawings, Figure 1 is a front elevation of the parts in connection with the steering-wheel of an automatic front-steering tricycle. Fig. 2 is a sectional side elevation of the same. Fig. 3 shows a modified form. Fig. 4 is a perspective view of a spring saddle-support constructed in accordance with my invention.

In Figs. 1 and 2, *a* is the fore part of the frame of the tricycle. *b* is an inclined tube fixed to the frame. *c* is another tube within the tube *b*. *d* is the steering cross-head or handle. Its stem *d'* enters within the tube *c* at its upper end and is securely fixed by rivets or otherwise. c^2 is a cam or inclined block fixed on the tube *c*. b^2 is a similar cam or inclined block fixed on the tube *b*. *e* is a coiled spring surrounding the lower end of the tube *c* immediately above the fork in which the steering-wheel is held. The spring *e* abuts against a flange, c^3, on the tube *c*, and also against another flange, b^3, on the tube *b*. As the spring *e* is in compression it brings together the inclined faces of the blocks b^2 and c^2, and when permitted to do so holds them in the position shown in Fig. 2, and with the steering-wheel parallel to the main wheels.

When force is applied to the cross-head to

steer the vehicle to the right or left, the spring *e* is further compressed as the incline on the block c^2 ascends the incline on the block b^2. As soon as the cross-head is released the spring *e* causes the return of these parts to the position in which they are represented in the drawings. *f* is the steering-wheel, and *g* is the fork in which it is held. *g'*, the stem of this fork, enters within the tube *c* and bears at its upper end against the coiled spring *h*, contained within *c*. The other end of the spring *h* abuts on a disk or stop at the closed upper end of the tube *c*. The stem *g'* has a slotted hole in it at $g^{\times}$, and a key, c^4, fixed into the tube *c*, passes through it. The stem *g'* is consequently able to play up and down in the tube *c*, the spring *h* yielding as the wheel passes an obstacle, and the jar which otherwise would be transmitted to the steering-handle and the hands of the rider is avoided. The slot $g^{\times}$ and key c^4 insure the movement of the steering cross-head being transmitted to the steering-wheel. The cams or inclined blocks b^2 and c^2 and the spring *e* insure, when the steering-handle is released, that the steering-wheel is set for direct forward movement. Other means may be resorted to for preventing the stem *g'* turning within the tube *c*, in place of using the key c^4 and the slot $g^{\times}$. Thus, as is shown in Fig. 3, the stem *g'* may be square, and may be passed through a square hole in a block, C, fixed within the tube *c*. In this case, in addition to the spring *h*, operating as already described, I prefer to employ a second and opposing spring, H, so that the stem may never come to a dead stop.

In Fig. 4, *k* is a base-plate or bar clamped onto the frame of the vehicle. *l* is a spring-blade jointed to *k* at *k'*. At *l'* the blade *l* is coiled around the joint *k'* in two open coils. l^2 is the horizontal limb of the blade *l*, and upon this the saddle is clamped in the usual way. *m* is a coiled spring supporting the fore end of the blade *l*, and *n* is a bolt passing through the parts *k* and *l*, and through the interior of the coiled spring. The bolt *n* restrains the upward tendency of both the blade *l* and the spring *m* when the weight is off the saddle. This arrangement of springs gives great elasticity, and prevents, to a great extent, the rider being jarred by the irregularities of the road.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is—

1. The combination of the frame, the outer tube fixed thereto, the cam on the upper end of this tube, the tube rotating and sliding within the outer tube, the cam fixed on the upper end of the inner tube, the steering-handle, its stem projecting into and fixed to the inner tube, the compressed coiled spring thrusting upward against the lower end of the outer tube and downward against the lower end of the inner tube, the steering-wheel, its fork having the stem projecting into the inner tube and turning therewith and sliding therein, and the coiled spring within the inner tube and thrusting upward against it and downward upon the stem of the steering-wheel fork, all substantially as and for the purpose set forth.

2. A saddle-support for a tricycle or like vehicle, consisting of the combination of the base-plate, the blade-spring coiled at one end and jointed to one end of the base-plate, the bolt passing through the other ends of the base-plate and spring, and the coiled spring between the base-plate and blade-spring, substantially as set forth.

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