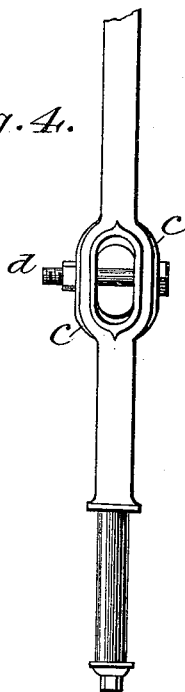
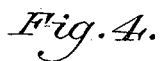


S. E. WORRELL.

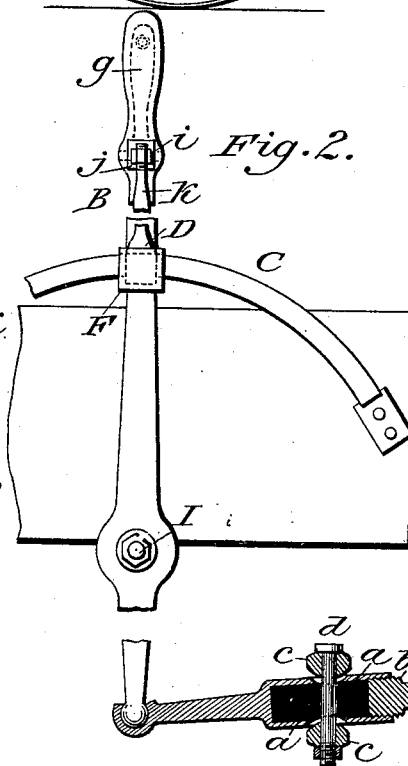
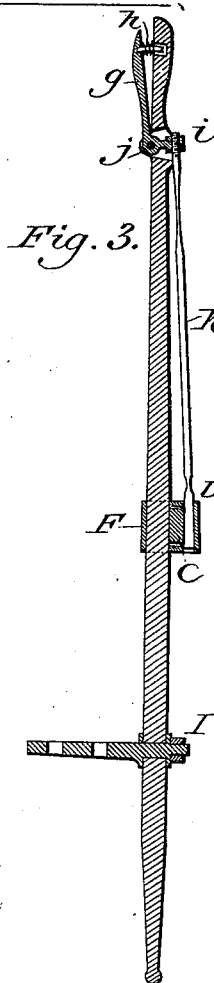
No. 346,974.

Patented Aug. 10, 1886.



Witnesses:

L R Andersen.
A. C. Green.



Inventor:

Stanley E. Worrell.

UNITED STATES PATENT OFFICE.

STANLEY E. WORRELL, OF HANNIBAL, MISSOURI.

ROAD-ENGINE.

SPECIFICATION forming part of Letters Patent No. 346,974, dated August 10, 1886.

Application filed December 17, 1885. Serial No. 1:5,990. (No model.)

To all whom it may concern:

Be it known that I, STANLEY E. WORRELL, a citizen of the United States, residing at Hannibal, in the county of Marion and State of Missouri, have invented a new and useful device, of which the following is a specification.

My invention relates to an improvement in common road-engines or self-propelling vehicles. As heretofore constructed, these conveyances have been unwieldy, difficult to guide, therefore requiring a great reduction of speed in making turns, and frequently getting beyond the control of the operator, thus being liable to accidents and dangerous to operate, except at a very limited rate of speed. These serious objections have prevented the adoption of this method of transportation, except to a limited extent, while its natural advantages would point to its great utility.

The object of my invention is to supply a simple device which will give the operator or guider of these vehicles more perfect control of them while in motion, so as to overcome the above-mentioned objections, and thereby greatly facilitating their adoption.

I am aware that many devices have been patented for guiding traction or road engines, consisting of cranks in connection with cog-wheels, chains and sprockets, or rope and band pulleys, also frictional gearing, all of which are objectionable for containing too much lost motion and being too slow or uncertain in action. Some of these inventions are faulty from being rigidly constructed, and therefore liable to injure the operator or disable the machinery when the wagon is passing over roads with an uneven surface. My device widely differs from these in not containing any cranks, wheels, chains, ropes, or bands. It is quick in action, has no lost motion, is easy to operate, and not liable to disarrangement, and is so constructed that, although at all times firmly governing the guiding-wheels, it permits of sufficient elasticity to allow them to pass over the usual inequalities of common highways at a comparatively high rate of speed without any serious shocks to the operator or vehicle.

Having explained wherein my invention differs in principle from those heretofore designed for a similar purpose, I will now pro-

ceed to describe its construction and method of operation.

In the accompanying drawings, in which similar letters of reference indicate like parts, Figure 1 is a side elevation of a road-engine embodying my device. Fig. 2 is an enlarged vertical section of my invention. Fig. 3 is a vertical cross-section of the guiding-lever, and Fig. 4 is a plain elevation of one end of the front or guiding axle.

In Fig. 1, A is a self-propelling wagon for common roads, in which L is the motor, M is the main wheel, O the counter-shaft, and P the driving-wheel. Near the forward end is the hand-lever B, pivoted at I, guided by the quadrant C, and joined to the axle *c* by the connecting-rod E.

In the handle of the lever B is a slot, *j*, Fig. 3, in which is pivoted the angular spring-latch *g*, its upright arm being forced away from the handle by a spring, *h*. Through its lower arm, at *i*, passes the rod *k*, connecting it with the friction-wedge D, which is held in contact with quadrant C by the clamp F. The connecting-rod E is secured to the lower end of the lever B by a ball-and-socket joint, which permits of free movements of this rod in all directions. Its opposite end is enlarged and hollowed out for the purpose of inclosing two rubber or metal springs, *a a*, the joining ends of these being grooved to fit the bolt *d*. They are firmly pressed against said bolt or pin by the screw-plug *b*, which allows of an accurate adjustment of their pressure. If preferable, a tapered key can be substituted for this plug. The slot in the axle *c*, Fig. 4, is countersunk on both sides, so as to permit considerable lateral or vertical movement of the opposite end of the connecting-rod E. The upper end of the rod *k* is threaded, so as to take up the wear of the quadrant C and wedge D.

The operation of my invention is as follows: The vehicle being in motion, and the operator having hold of the guiding-lever B, which, in an undisturbed state, is locked stationary by the frictional wedge D, and wishing to change the direction in which the wagon is moving, he clasps his hand more closely together, thus drawing the latch *g* toward the handle. This movement lowers the nut *i* and rod *k*. The latter pushes down the wedge D. This re-

moves the pressure from the quadrant C and allows the lever to freely move on its pivot *l*. The operator now throws forward the handle. The opposite end of the lever, moving backward, draws the connecting-rod E with it. This in turn pulls back the right end of the axle *c*, which, being pivoted at its center, carries forward the other end, together with their two respective wheels, and causes the wagon to turn to the right. In turning to the left the operation is the same, except that the handle of the lever is moved backward. When moving in a direct line or in an even curve, after placing the lever in the proper position, the pressure is removed from the latch *g*. The spring *h* then acts on this latch, drawing up the friction-wedge D so as to cause it to press heavily against the quadrant C, thereby firmly holding the lever B in one position. The pressure of the spring *h* is so adjusted that in the event of either of the guiding-wheels coming into contact with a serious obstruction the wedge D will slip upon the quadrant, thus preventing accident to the guiding mechanism. The elasticity of the springs *a a* allows a considerable vibration of the axle *c* without moving the lever B; so ordinary obstacles in the roadway are passed over by the guiding-wheels without injurious shocks to the device or the arm of the operator. Although I find the above-described a convenient method of constructing this device, I do not limit myself exactly thereto. If so desired, the guiding-lever may be bent with the angle at *l*, thereby giving the handle a perpendicular instead of a horizontal movement. If preferable, the joining faces of the quadrant C and wedge D may be corrugated instead of smooth. A curved metal or a rubber spring can be substituted for the spiral spring *h*; likewise spiral or bent steel springs can be used in place of the rubber cushions *a a*, and various other changes in the details can be made without departing from the nature of my invention.

My invention is applicable for guiding self-propelling wagons or vehicles for common roads, traction-engines, also bicycles and tri-cycles.

Having fully described the construction and operation of my invention, what I claim, and desire to secure by Letters Patent, is—

1. In a guiding device for self-propelling vehicles for common roads, the combination of the hand-lever B, in which is pivoted the spring-latch *g*, connected with the frictional wedge D, the slotted clamp F, the quadrant C, the connecting-rod E, containing the springs *a a* and the pressure-plug *b*, and the slotted guiding-axle *c*, provided with bolt *d*, substantially as described.

2. In combination with the angular latch *g*, pivoted in a hand-lever and provided with the spring *h*, the rod *k*, flattened near its upper end and threaded into the nut *i*, with the wedge D at its opposite end, the clamp F, and the quadrant C, substantially as set forth, and for the purpose specified.

3. The combination of the quadrant C, the slotted clamp F, and the wedge D, for the purpose described.

4. In combination with the connecting-rod E, provided at one extremity with a universal joint, the opposite end containing the springs *a a* and the pressure-plug *b*, the countersunk slot near one end of the guiding-axle *c*, with the bolt *d*, substantially as and for the purpose specified.

5. In a guiding device for road-engines, the combination of the compressed springs *a a* and the bolt *d*, passing perpendicularly through a horizontal countersunk slot near one end of the pivoted guiding-axle, substantially as described.

STANLEY E. WORRELL.

Witnesses:

J. E. KIRLIN,
J. E. GREEN.