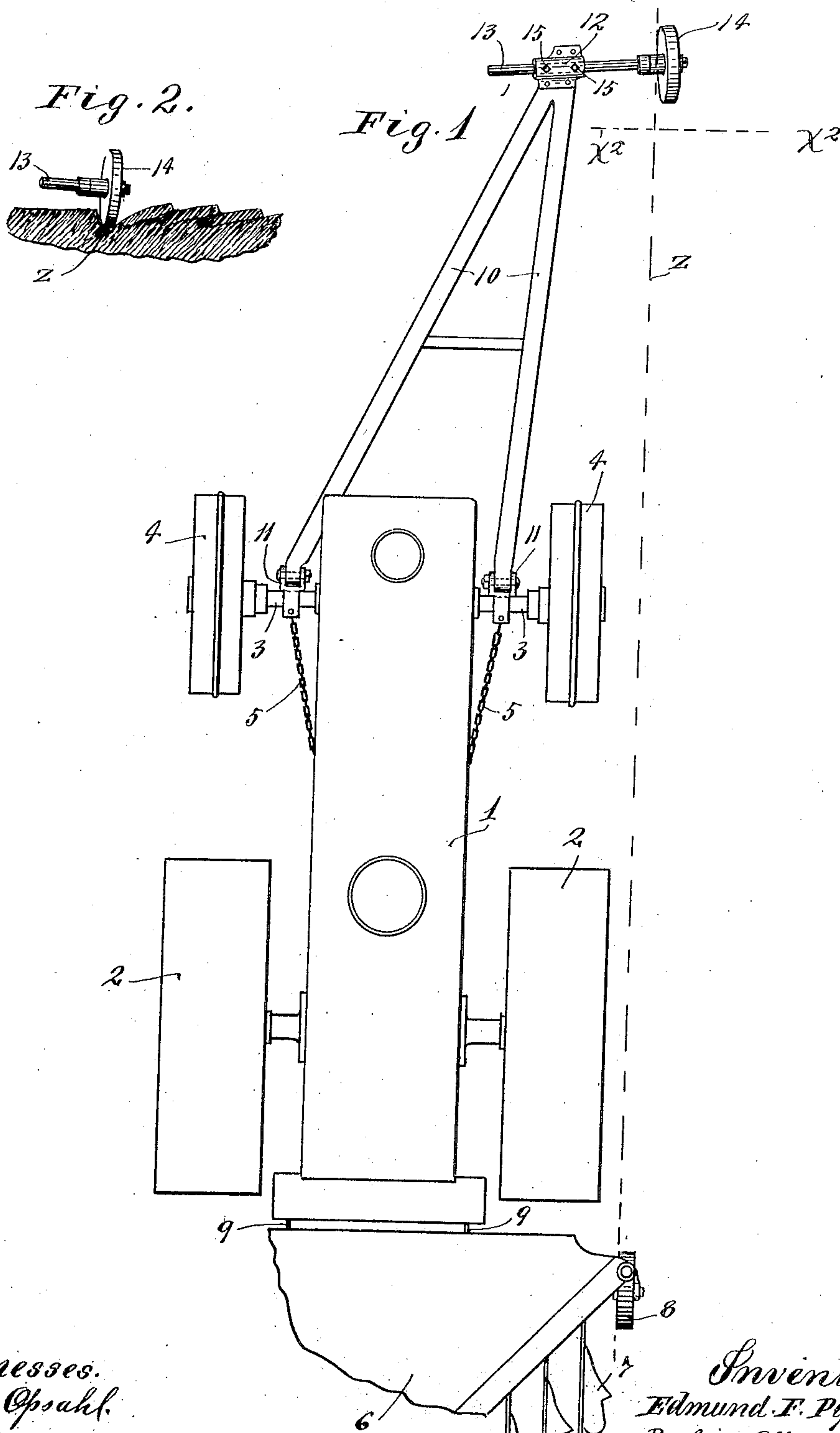


No. 821,253.

PATENTED MAY 22, 1906.

E. F. PIPER.
AUTOMATIC STEERING DEVICE FOR TRACTION ENGINES.

APPLICATION FILED APR. 29, 1905.



Witnesses.
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UNITED STATES PATENT OFFICE.

EDMUND F. PIPER, OF FARGO, NORTH DAKOTA.

AUTOMATIC STEERING DEVICE FOR TRACTION-ENGINES.

No. 821,253.

Specification of Letters Patent.

Patented May 22, 1906.

Application filed April 29, 1905. Serial No. 258,003.

To all whom it may concern:

Be it known that I, EDMUND F. PIPER, a citizen of the United States, residing at Fargo, in the county of Cass and State of North Dakota, have invented certain new and useful Improvements in Automatic Steering Devices for Traction-Engines; 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 to traction-engines, and especially to traction-engines connected up to draw gang-plows, and has for its object to provide an automatic steering device therefor which will cause the engine and the plows to follow the furrow previously cut.

To the above ends the invention consists of the novel devices and combinations of devices hereinafter described, and defined in the claim.

In the accompanying drawings, which illustrate my invention, like characters indicate like parts throughout both the views.

Figure 1 is a plan view showing a traction-engine and a gang-plow in diagram, some parts being broken away, and showing my improved steering device applied to the front axle of the said engine; and Fig. 2 is a view in elevation illustrating the position of the steering-wheel with respect to the furrow, the ground being sectioned on the line $x^2 x^2$ of Fig. 1 and the wheel-supporting device being broken away.

Of the parts of the traction-engine it is only desirable to note the body 1, the rear traction-wheels 2, the pivoted front axle 3, and the front wheels 4, mounted on said axle. As is well known, the traction-engine is steered by oscillating movements of its pivoted front axle, such oscillating movements being controlled through chains 5 and other steering mechanism (not shown) arranged to be operated by hand. For the purposes of my invention the usual hand-operated steering mechanism need not be considered.

The gang-plow is only shown in part, and of the parts shown it is only necessary to note the frame 6, the plows 7, and one of the supporting-wheels 8. The plow-frame 6 is connected to the body of traction-engine by suitable coupling devices, (indicated diagrammatically at 9.)

In applying my improved automatic steering device I preferably provide a V-shaped frame or truss-arm 10, that projects in front of the engine, and the prongs of which at their

rear ends are pivoted for vertical movement to coupling-brackets 11, rigidly secured to the axle 3, one on each side of the body 1. On the free forwardly-projected end of the frame 10 is a sleeve-like bearing 12, in which is rigidly but adjustably secured a spindle 13. To that end of the spindle 13 which projects over the furrow is loosely journaled steering-wheel 14, preferably formed without spokes or openings. As shown, set-screws 15 work through the sleeve 12 and impinge on the spindle 13 to rigidly hold the same in its set position with respect to the frame 10. The spindle 13 is so set that the wheel 14 stands at an inclined plane, inclining at its top outward from the edge of the furrow and converging inward at its edge toward the furrow; otherwise stated, the axis of said steering-wheel extends downward and forward with respect to said pivoted axle in a direction toward the furrow side of the machine. The steering-wheel 14 when thus set will, under the forward movement of the engine, tend to closely hug and run against the vertical edge Z of the furrow, and hence will follow the furrow whether the same be straight, curved, or irregular. Said steering-wheel will therefore cause the engine and the plows to follow a course parallel with the furrow previously cut. The distance which the plow adjacent to the furrow will be caused to travel from the furrow previously cut will depend on the distance of the steering-wheel 14 from the bearing 12, and this distance, as already stated, may be varied by longitudinal adjustments of the spindle or shaft 13 from the said bearing. As is evident, the steering-frame 10, being free for vertical movements, the steering-wheel 14 will freely run over any irregularities in the ground without interfering with the steering-axle.

The efficiency of the device described has been demonstrated in actual practice.

From what has been said it will be understood that the device described is capable of a large range of modification within the scope of my invention as herein set forth and claimed. In fact, I believe I am the first to provide an automatic steering device for a traction-engine or other vehicle capable of being steered on the general plan or in the manner described.

The device is of small cost and is capable of being applied to any traction-engine.

The automatic steering attachment may be thrown out of action simply by raising the

frame 10, so as to carry the steering-wheel out of contact with the ground. Any suitable means (not shown) may be provided for raising the said frame and for holding the same in an elevated position.

What I claim, and desire to secure by Letters Patent of the United States, is as follows:

The combination with a vehicle having a pivoted axle, of an automatic steering device therefor, comprising a steering-frame connected to said pivoted axle, and a steering-

wheel mounted on the free end of said steering-frame, with its axis extending downward and forward with respect to said pivoted axle, in a direction toward the furrow side of the machine, substantially as described.

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

EDMUND F. PIPER.

Witnesses:

ALICE R. BLAIR,
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