

No. 721,724.

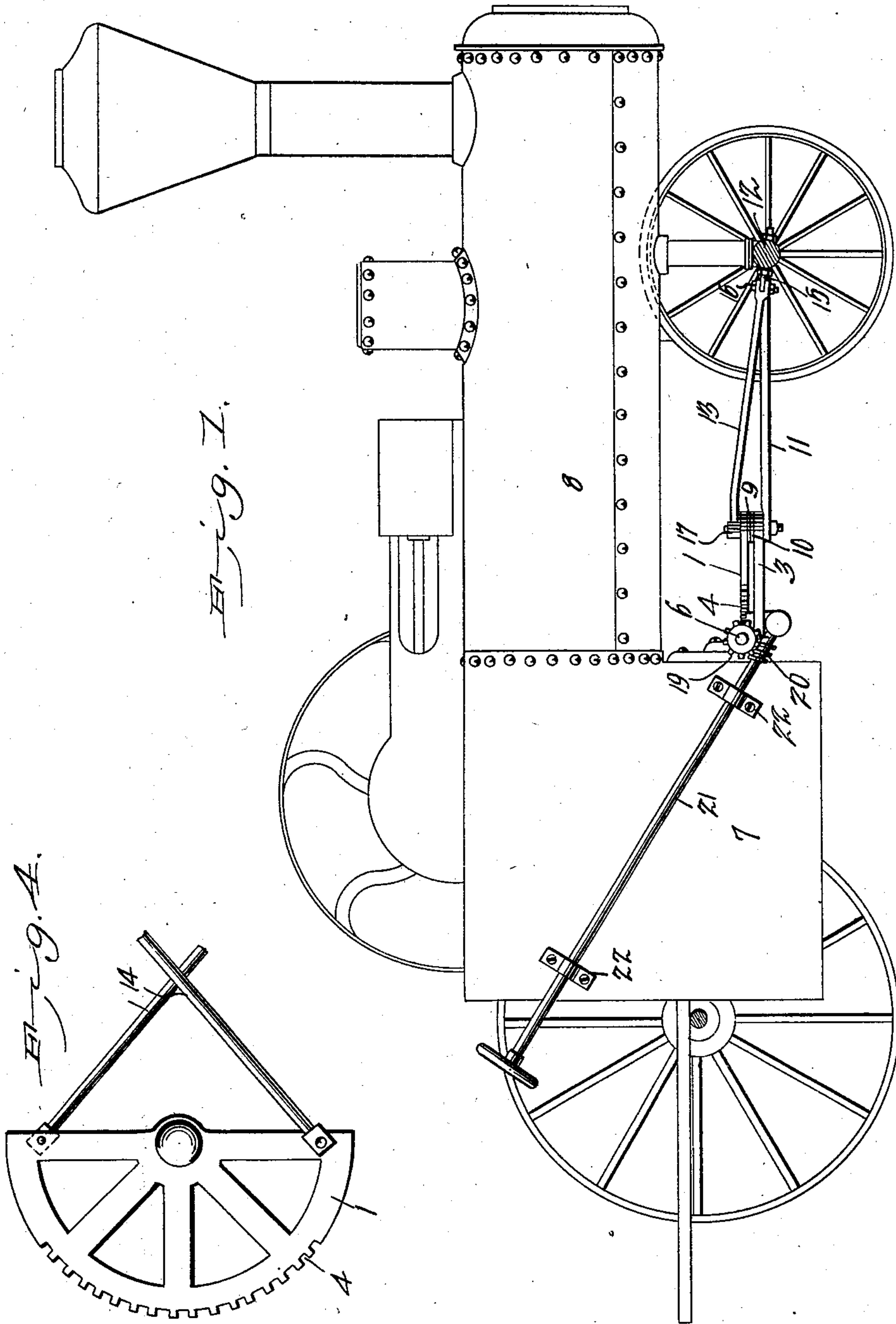
PATENTED MAR. 3, 1903.

W. F. MCBETH.  
STEERING GEAR FOR TRACTION ENGINES.

APPLICATION FILED AUG. 13, 1902.

NO MODEL.

2 SHEETS—SHEET 1.



Witnesses  
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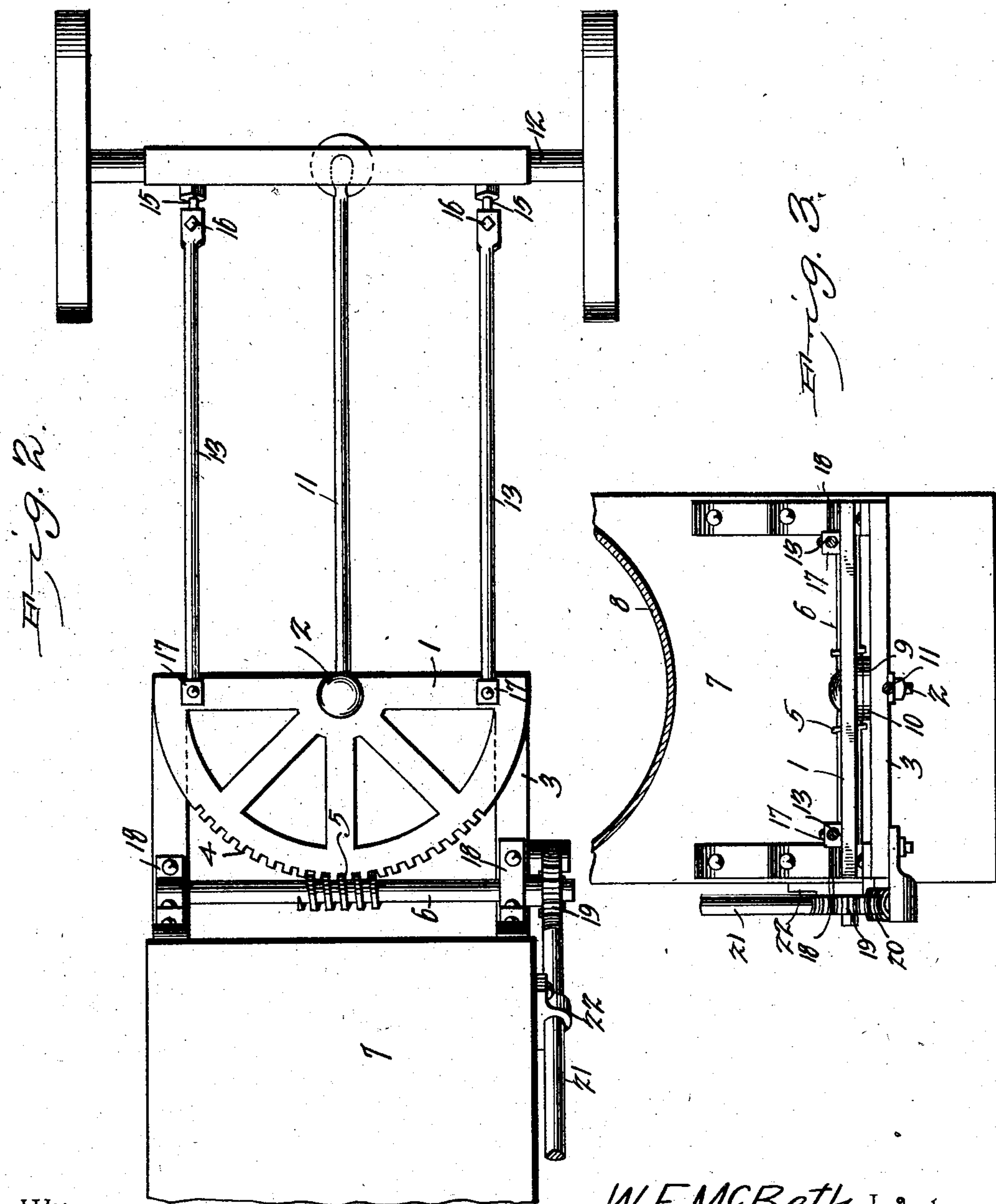
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# UNITED STATES PATENT OFFICE.

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## STEERING-GEAR FOR TRACTION-ENGINES.

SPECIFICATION forming part of Letters Patent No. 721,724, dated March 3, 1903.

Application filed August 13, 1902. Serial No. 119,564. (No model.)

*To all whom it may concern:*

Be it known that I, WARREN FLETCHER MCBETH, a citizen of the United States, residing at Paxton, in the county of Ford and State of Illinois, have invented a new and useful Steering-Gear for Traction-Engines, Automobiles, &c., of which the following is a specification.

The invention relates to improvements in steering-gear for traction-engines, automobiles, and other motor-vehicles.

The object of the present invention is to improve the construction of steering-gear for traction-engines, automobiles, and other motor-vehicles and to provide a simple, inexpensive, and efficient construction adapted to cause an engine or vehicle to travel in any desired direction without continuously holding and manipulating the steering-gear and by manipulating the said gear only when it is desired to change the direction or course and capable of affording a more steady and uniform motion of an engine or vehicle and of lessening the labor of guiding the same.

The invention consists in the construction and novel combination and arrangement of parts hereinafter fully described, illustrated in the accompanying drawings, and pointed out in the claims hereto appended.

In the drawings, Figure 1 is a side elevation of a traction-engine provided with a steering-gear constructed in accordance with this invention. Fig. 2 is a plan view, partly in section, illustrating the arrangement of the gearing. Fig. 3 is a transverse sectional view. Fig. 4 is a detail view illustrating another arrangement of the rods for connecting the front axle with the toothed segment.

Like numerals of reference designate corresponding parts in all the figures of the drawings.

1 designates a toothed segment pivotally mounted by a bolt 2 or other suitable fastening device on a bracket or frame 3 and having a straight front edge and a curved rear edge provided with teeth 4 and meshing with a worm-gear 5 of a transverse shaft 6. The bracket or frame, which may be of any desired construction and which in practice will be varied to suit the character of the vehicle

to which the steering-gear is to be applied, is shown in the accompanying drawings bolted in advance of the fire-box 7 of a traction-engine and arranged beneath the boiler 8. The toothed segment is preferably provided at its lower face with a bearing 9, which is interlocked with a corresponding bearing 10 of the bracket or frame to relieve the pivot-bolt of strain. The bearing may be constructed in any desired manner, and the bracket and the pivot-bolt are braced by a rod 11, extending from the said pivot-bolt to the pivot of the front axle 12 of the traction-engine. The toothed segment, which is located at a point between the ends of the traction-engine, is connected with the front axle by a pair of rods 13, which may be arranged parallel, as illustrated in Fig. 2 of the accompanying drawings, or crossed, as shown at 14 in Fig. 4 of the drawings. The front ends of the rods 13 are bifurcated to receive the heads of bolts 15, which pass through the front axle and which are provided at their rear ends with eyes for the reception of pivots 16. The rear ends 17 of the rods 13 are connected with the toothed segment by bolts or other suitable pivots, and when the toothed segment is oscillated the front axle will be turned, as will be readily apparent.

The transverse shaft 6 is journaled in suitable bearings 18 of the bracket or frame 3 and has keyed or otherwise secured to its outer end a gear-wheel 19, which meshes with a worm-gear 20 of an inclined steering-rod 21, journaled in suitable bearings 22 and arranged at one side of the fire-box, as clearly shown in Fig. 1; but the steering-rod may be disposed at any other desired point, as will be readily apparent. The steering-rod is provided at its upper end with a hand-wheel, and when it is rotated motion will be communicated to the transverse shaft, which through its worm will oscillate the toothed segment and change the position of the front axle, thereby changing the course of the traction-engine. The gearing is also adapted to form a lock for rigidly holding the front axle in its adjusted position, and the traction-engine or other machine to which the steering-gear is applied will continue in a given direction



until its course is changed by manipulating the steering-gear. The motion of the traction engine or vehicle will be rendered steady and uniform by the gearing, which will prevent any vibration of the axle in adjusting the same, and the labor of guiding a vehicle will be reduced to a minimum.

I desire it to be understood that various changes in the form, proportion, and minor details of construction within the scope of the appended claims may be resorted to without departing from the spirit or sacrificing any of the advantages of this invention, such as varying the form of the frame or bracket and the manner of mounting the parts to adapt the steering-gear to the engine or vehicle to which it is to be applied. Also bevel or other form of gearing may be employed for connecting the steering-rod with the transverse shaft 6, and suitable springs may be employed inside of the boxings of the said shaft to take up jar of the rods and the axle, if necessary or desirable.

What I claim is--

1. A steering-gear comprising a toothed segment pivoted directly to a suitable support and designed to be located in rear of the front axle of a vehicle or machine, rods extending forward from the toothed segment for connecting the same with the front axle and pivotally connected to each of such parts, a transverse shaft having a worm meshing with the segment, and gearing for rotating the transverse shaft, substantially as described.

2. A steering-gear comprising a support, a

toothed segment pivoted directly to the support and having a curved rear edge provided with teeth, a transverse shaft journaled in suitable bearings of the support and having a worm meshing with the teeth of the segment, a pair of rods extending forward from the segment for connecting the sides thereof with the front axle of a machine or vehicle and pivoted to each of such parts, a gear-wheel mounted on the transverse shaft, and a steering-rod having a worm meshing with the gear-wheel, substantially as described.

3. A steering-gear comprising a support designed to be arranged in rear of the front axle of a vehicle or machine, a segment pivotally mounted on the support and having a curved rear edge provided with teeth, a brace-rod connected with the support by the pivot of the segment and extending to the front axle, rods extending forward from the segment for connecting the sides of the same with the front axle, a transverse shaft mounted on the support in rear of the segment and provided with a worm meshing with the same, a steering-rod, and gearing for connecting the steering-rod with the transverse shaft, substantially as described.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

WARREN FLETCHER McBETH.

Witnesses:

FRANK LINDLEY,

GUSTAF E. JOHNSON.