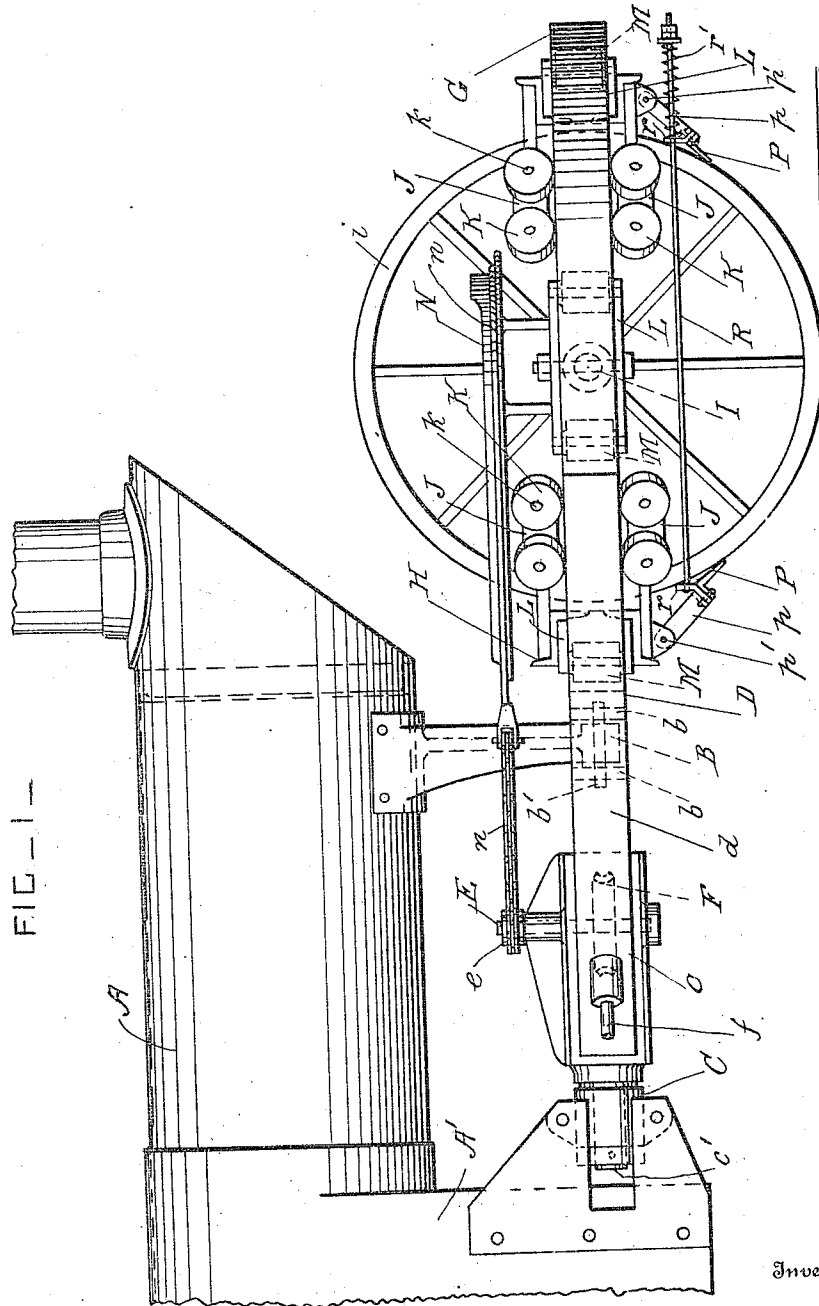


G. A. ANDERSON.
STEERING MECHANISM FOR ROAD ENGINES.
APPLICATION FILED DEC. 23, 1909.

Patented Jan. 31, 1911.

2 SHEETS-SHEET 1.

983,197.



Inventor

Witnesses

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364

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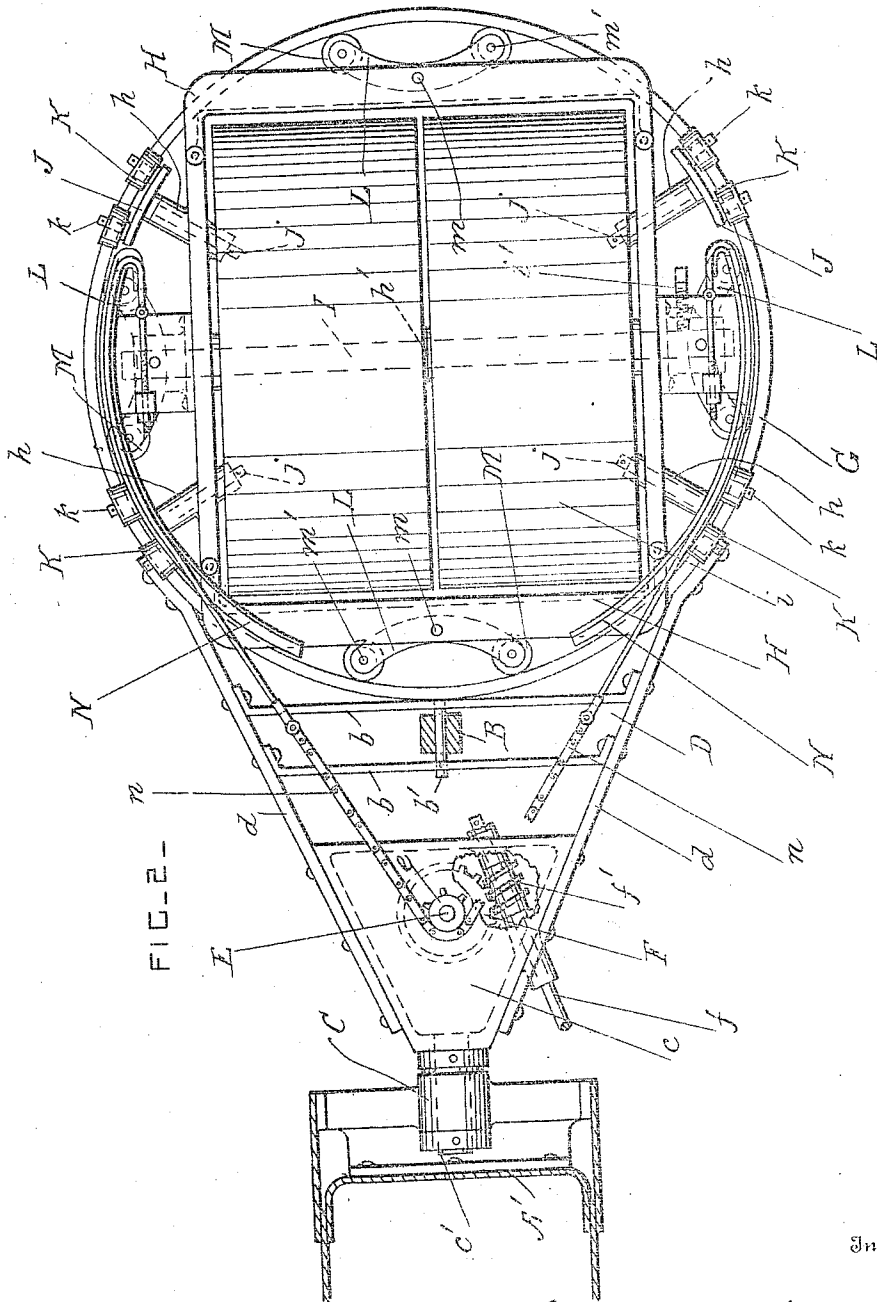
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UNITED STATES PATENT OFFICE.

GUSTAF ARVID ANDERSON, OF WAYNESBORO, PENNSYLVANIA, ASSIGNOR TO THE
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STEERING MECHANISM FOR ROAD-ENGINES.

983,197

Specification of Letters Patent.

Patented Jan. 31, 1911.

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To all whom it may concern:

Be it known that I, GUSTAF ARVID ANDERSON, a citizen of the United States, residing at Waynesboro, in the county of Franklin and State of Pennsylvania, have invented certain new and useful Improvements in Steering Mechanism for Road-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.

This invention relates to mechanism for steering steam road-rollers and other similar road-engines; and it consists of a turntable constructed as hereinafter fully described and claimed and supported from the boiler at the front end portion of the engine.

In the drawings, Figure 1 is a side view of the steering mechanism. Fig. 2 is a plan view of the steering mechanism.

A is a portion of the steam boiler of a road-roller of any approved construction, A' being the front portion of its firebox portion.

B is a bearing which is secured to the front end portion of the boiler shell, and C is a bearing secured to the firebox in line with the bearing B.

D is a frame provided with side-bars *d* which are arranged at an acute angle with each other, and *b* are two crossbars secured between the middle parts of the side-bars *d*. The crossbars *b* are pivoted to the bearing B by means of a pin *b'*.

A triangular box *e* is secured between the rear end portions of the side-bars *d*, and is provided with a projecting pivot *c'* which is journaled in the bearing C.

E is a steering-shaft journaled in bearings on the box *e*, in a vertical position, and provided with a sprocket-wheel *e* on its upper end outside the box.

F is a worm-wheel secured on the shaft E inside the box, and *f* is a driving-shaft which projects from one side of the box. The shaft *f* is journaled in bearings on the box, and a worm *f'* is secured on it in gear with the worm-wheel F.

The box has a removable cover, and is preferably partially filled with oil so that the worm and worm-wheel are constantly lubricated. Any other approved driving devices may be used for oscillating the steer-

ing-shaft E, and any approved form of handle or hand-wheel is operatively connected with the driving-shaft.

G is a circular ring or turntable-track secured to the front end portions of the side-bars *d*.

H is a square frame formed of suitable bars and brackets secured together and arranged inside the track G.

I is the shaft of the steering-wheel which is secured in the frame H, and *i* is the steering-wheel formed of two or more wheel-sections journaled side by side on the shaft I.

The frame H is provided with bearings *h* which are arranged radially of a point *h'* which is at the intersection of the axis of the steering-wheel *i* with the axis of the pivots *b'* and *c'*. The bearings *h* are arranged in pairs, and they project above and below the track G.

J are rocking-bars provided at their middle parts with pivots *j* which are journaled in the bearings *h*. The end portions of the bars J are provided with pins *k*, and K are conical wheels or rollers journaled on the pins *k* and running in contact with the top and bottom surfaces of the track G. The rocking-bars J and their wheels are arranged at similar intervals around the turntable.

The frame H is formed of resilient material, either wholly or in part, so that it is to some extent flexible, and it is secured to the shaft I at one end only by a set-screw *z'* or other fastening device. The other end portion of the frame H is free to rock pivotally to a limited extent on the shaft I, and this construction enables the wheels or rollers to bear with greater uniformity upon the track, and also compensates for slight imperfections of the track such as roughness or distortion.

L are rocking-bars pivoted at their middle portions to the frame H by pins *m*. These bars are arranged in pairs at equal distances apart around the frame H, and M are rollers journaled on pins *m'* carried by the end portions of the bars L. These rollers M bear against the inside of the track G.

N are two curved segments secured to the upper part of the frame H, and *n* is a flexible driving-connection which passes over the sprocket-wheel *e*, and which has its ends bent around and secured to the curved seg-

ments N. The driving-connection is preferably formed of a piece of drive-chain having its ends connected to short lengths of wire-rope which are connected to the segments.

5 The frame D rocks on its pivots as the steering-wheel passes over uneven ground; and the turntable is oscillated by the steering-shaft and connections to guide the engine, without having its motion interfered with by the rocking motion of the engine.

10 P are two scrapers provided with arms p which are pivoted to the frame H by pins p' , and arranged one on each side of the steering-wheel.

15 R is a connecting-rod which passes through holes in lugs r on the scrapers; and r' is an adjustable spring carried by the end portion of the rod R, and operating to press the blades of the scrapers simultaneously against the periphery of the steering-wheel, and thereby preventing mud from adhering to its surface. The resilience or flexibility of the frame H also prevents the scrapers from being too rigid, but its chief advantage is that it permits the devices to be operated successfully after the track has been sprung out of its true shape.

What I claim is:

30 1. In a steering mechanism, the combination, with a support, of a main frame pivoted at one end and at its middle part to the said support and provided at its free end with a turntable track, said frame and track being arranged to rock on a horizontal axis, of a turntable-frame mounted on the said track and free to turn on a vertical axis, a steering road-wheel journaled in the turntable-frame, and steering mechanism for oscillating the turntable-frame and road-wheel.

2. In a steering mechanism, the combination, with a boiler, of a bearing secured to the front of the firebox portion of the boiler, a bearing depending from the main portion of the boiler, a frame having its rear and middle parts pivoted in the said bearings and free to rock on a longitudinal axis, a turntable-track secured to the free end portion of the said frame in front of the bearings, a frame mounted on the said track, a steering-wheel carried by the last said frame, and steering-devices for oscillating the steering-wheel and its frame on a vertical axis.

3. In a steering mechanism, the combination, with a boiler, of a rear bearing secured to the firebox portion of the boiler, a front bearing depending from the main portion of the boiler, a frame having side-bars arranged at an angle to each other and having its middle part pivoted to the front bearing and having a pivot at its rear end which is mounted in the rear bearing, a turntable-track secured to the free front end

portion of the said frame, a frame mounted on the said track, a steering-wheel carried by the last said frame, a steering-shaft journaled vertically in the first said frame between its said bearings, and steering-mechanism for oscillating the steering-wheel operatively connected with it and with the said steering-shaft.

4. In a steering mechanism, the combination, with a stationary support, of a frame pivoted at its rear end and at its middle part to the said support and free to rock on a longitudinal axis, said frame having at its rear end a box for oil, a turntable-track secured to the free front end portion of the said frame, a frame mounted on the said track, a steering-wheel carried by the last said frame and movable on a vertical axis, a steering-shaft journaled vertically in the said box, a worm-wheel secured on the said shaft inside the said box, a worm gearing into the said worm-wheel, an operating-shaft for the worm journaled in the said box and projecting from it, and steering devices for oscillating the steering-wheel operatively connected with it and with one end portion of the steering-shaft which projects from the said box.

5. In steering-mechanism, the combination, with a turntable track, of a turntable-frame, a steering wheel journaled in the said frame, arms having their middle parts pivoted to the turntable frame and provided at their ends with rollers which bear against the inside of the track, and wheels also carried by the turntable frame and running against the top and the bottom of the turntable track.

6. In a steering mechanism, the combination, with a turntable-track, of a frame arranged within the said track, a steering-wheel journaled in the said frame, a series of arms having their middle parts pivoted to the said frame, rollers journaled in the end portions of the said arms and bearing against the inside of the said track, two series of arms having radially arranged pivots at their middle parts for connecting them with the said frame, and wheels carried by the end portions of the last said arms and running against the top and the bottom of the said track respectively.

7. In a steering mechanism, the combination, with a turntable track, of a turntable-frame, a steering wheel journaled in the said frame, arms having their middle parts pivoted to one of the said portions of the turntable, and antifriction guides journaled in the end portions of the said arms and running against the other portion of the turntable.

8. In a steering mechanism, the combination, with a turntable-track, of a resilient frame arranged within the said track, a shaft having one end portion secured in

one end portion of the frame, the other end
portion of the frame being free to rock on
the shaft, a steering-wheel mounted loose
on the said shaft, rollers carried by the said
5 frame and bearing on the said track, and
steering-devices for oscillating the said
frame and wheel.

In testimony whereof I have affixed my
signature in the presence of two witnesses.

GUSTAF ARVID ANDERSON.

Witnesses:

HENRY F. NOYES,
J. STOVER PRICE.