

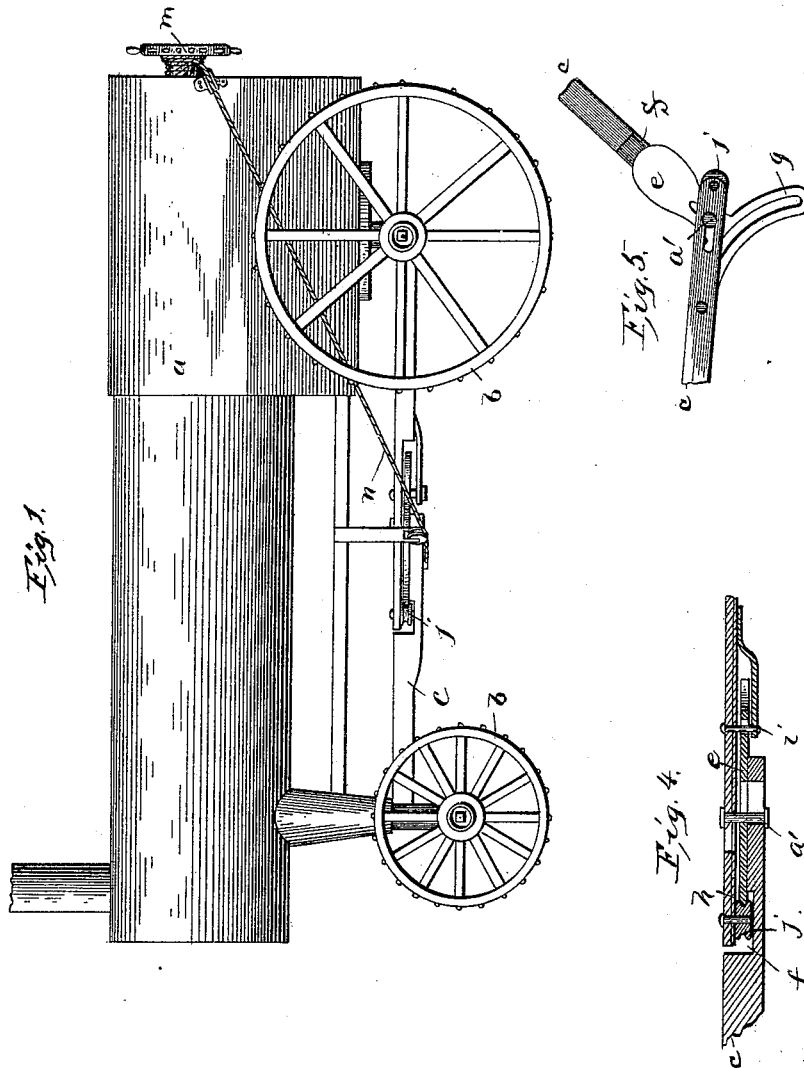
No Model.)

2 Sheets—Sheet 1.

B. F. FLESHMAN.  
STEERING GEAR FOR VEHICLES.

No. 420,873.

Patented Feb. 4, 1890.



Witnesses

*C. C. Duff*

*Chas. M. West*

Inventor

*B. F. Fleshman*

By his Attorney

*C. C. Duff*

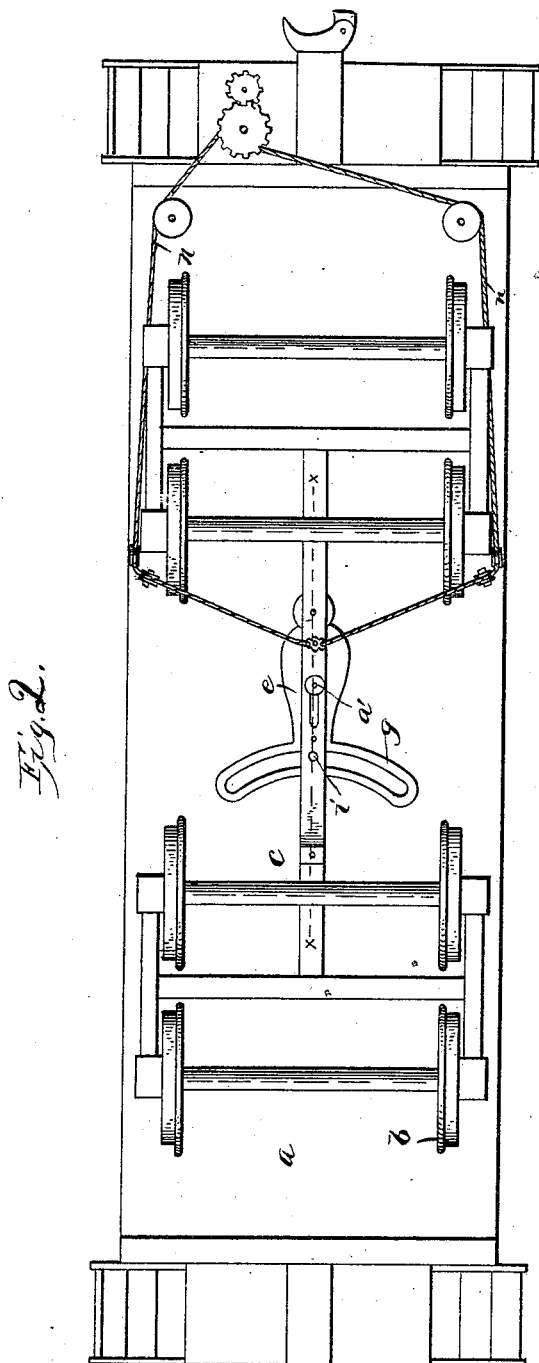
(No Model.)

2 Sheets—Sheet 2.

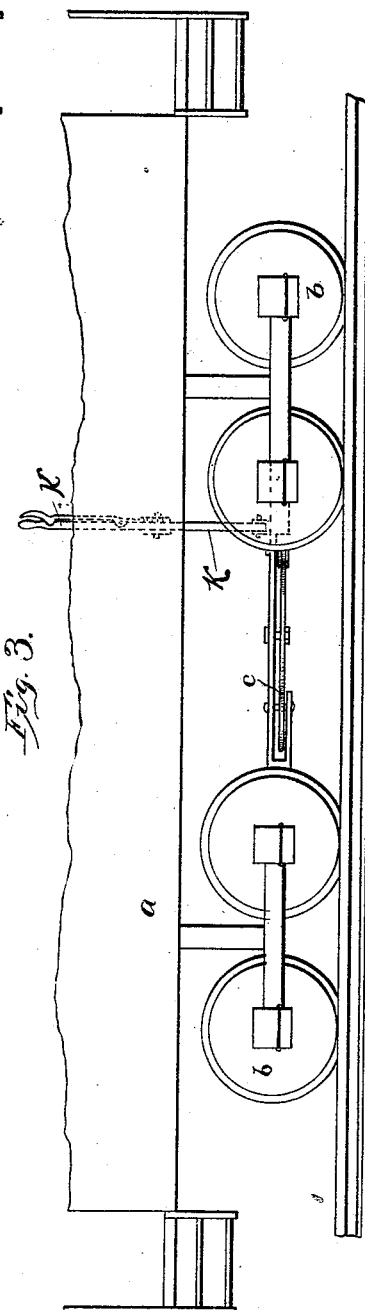
B. F. FLESHMAN.  
STEERING GEAR FOR VEHICLES.

No. 420,873.

Patented Feb. 4, 1890.



Witnesses  
*E. C. Duffy*  
*Chas. M. Werk*



Inventor  
*B. F. Fleshman*  
By his Attorney  
*E. C. Duffy*

# UNITED STATES PATENT OFFICE.

BENJAMIN F. FLESHMAN, OF ALVON, WEST VIRGINIA.

## STEERING-GEAR FOR VEHICLES.

SPECIFICATION forming part of Letters Patent No. 420,873, dated February 4, 1890.

Application filed November 13, 1889. Serial No. 330,223. (No model.)

*To all whom it may concern:*

Be it known that I, BENJAMIN F. FLESHMAN, of Alvon, in the county of Greenbrier and State of West Virginia, have invented certain new and useful Improvements in Guiding Apparatus for Vehicles; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form part of this specification.

My invention relates to certain improvements in steering or guiding apparatus for road-engines, railroad-cars, &c.; and the object and nature of the invention will be more fully described hereinafter, and particularly pointed out in the claims.

Referring to the accompanying drawings, Figure 1 shows in side elevation a road or traction engine provided with the steering apparatus. Fig. 2 is a bottom plan of a railroad-car provided with the present invention. Fig. 3 is a side view of a car provided with a guiding-lever. Fig. 4 is a section on line *xx*, Fig. 2. Fig. 5 is a detail view.

In the drawings, the reference-letter *a* indicates the body of a car or road-engine mounted upon the wheels *b*, and the frames, bolsters, or axles carrying these wheels are pivotally secured to the body of the vehicle, so as to swing in a horizontal plane. The front and rear bolsters or tracks are connected by the reach *c*, which reach is divided into two sections rigidly secured to the front and rear frames carrying the wheels. The inner ends of these two sections overlap and are provided with registering longitudinal slots in their overlapping ends, through which a securing or pivot bolt *a'* loosely extends. A metallic plate *e* is secured on the upper side of the end of the front reach-section and is provided with a longitudinal slot through which the pivot-bolt passes. The front end of this plate is rounded and projects laterally over the sides of the reach-sections and also over a transverse groove or slot *f* in the upper face of said reach-section. A closed transverse guide-yoke *g* is formed on the rear end of said plate with its end curving rearwardly a suitable distance. A corresponding face or

wear plate *h* is secured on the under side of the end of the rear reach-section and is provided with a slot through which the pivot-bolt passes, and with a pin *i* extending through and confined in the guide-yoke; and at its front end this plate *h* is provided with a strong downwardly-extending stud carrying a roller *j*, bearing against the front projecting edge of the plate *e*. A lever *k* is pivoted to one of the reach-sections, to swing the same laterally, and extends up through the bottom of the vehicle so as to be capable of operation by a person within the same. If desirable, instead of employing a lever the vehicle can be guided in opposite directions by connecting a wheel *m*, by means of connections *n*, with a reach-section, so as to swing the same in opposite directions when the wheel is rotated oppositely. The operating lever or wheel is provided with means to hold them in the desired adjustment.

The operation of this guiding apparatus is obvious. When one of the reach-sections is swung to guide the vehicle in a certain direction, the front and rear wheels are swung to the same angle or to travel in the same arc. When turning a curve, the body retains its position without tilting or straining by reason of the pivoted frames carrying the wheels, and the reach-sections swing on the pivot-bolt and separate longitudinally by reason of the slots in their ends. The strain between the sections is on the roller *j*, which bears and travels on the edge of the plate *e*, and the swing of the section is limited by the guide-yoke. By means of the lever or windlass the front and rear wheels are turned simultaneously and in the same degree; hence there is no side or lateral thrust on the wheels and no danger of the vehicle overturning. The vehicle can be turned with great ease. This invention is of great value on railroad-cars, preventing strain on the cars or on the rails.

What I claim is—

1. The combination, with the front and rear wheels of a car or traction-engine carried by laterally-swinging frames or axles, of a reach connecting and rigidly secured to said frames or axles, said reach being divided into two overlapping sections having longitudinal slots at their overlapping ends, a pivot-bolt pass-

ing through said slots and sections, a plate  
on one of said ends at one end rounded and  
having projecting edges and at the other end  
having a curved guide-yoke, the other sec-  
5 tion having a roller bearing on said edge and  
a projection confined in said yoke, and oper-  
ating-connections, such as set forth, directly  
secured to one of said sections to swing the  
same laterally, for the purpose set forth, and  
10 extending to within convenient reach of a  
person on the car or engine, substantially as  
described.

2. The combination, with the front and  
rear wheels of a vehicle carried by laterally-  
15 swinging frames, of a reach connecting said  
frames, divided into two overlapping sections  
rigidly secured, respectively, to the front and

rear wheel frames, a pivot-bolt extending  
through longitudinal slots in said overlap-  
ping ends, a plate secured to one of said ends 20  
having a rounded laterally-projecting end, a  
curved guide-yoke at the other end of the  
plate, a projection on the other section end  
confined in said yoke, and a roller carried by  
said last-mentioned end and bearing on the 25  
rounded end of said plate, substantially as  
described.

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

BENJAMIN F. FLESHMAN.

Witnesses:

O. E. DUFFY,  
C. M. WERLE.