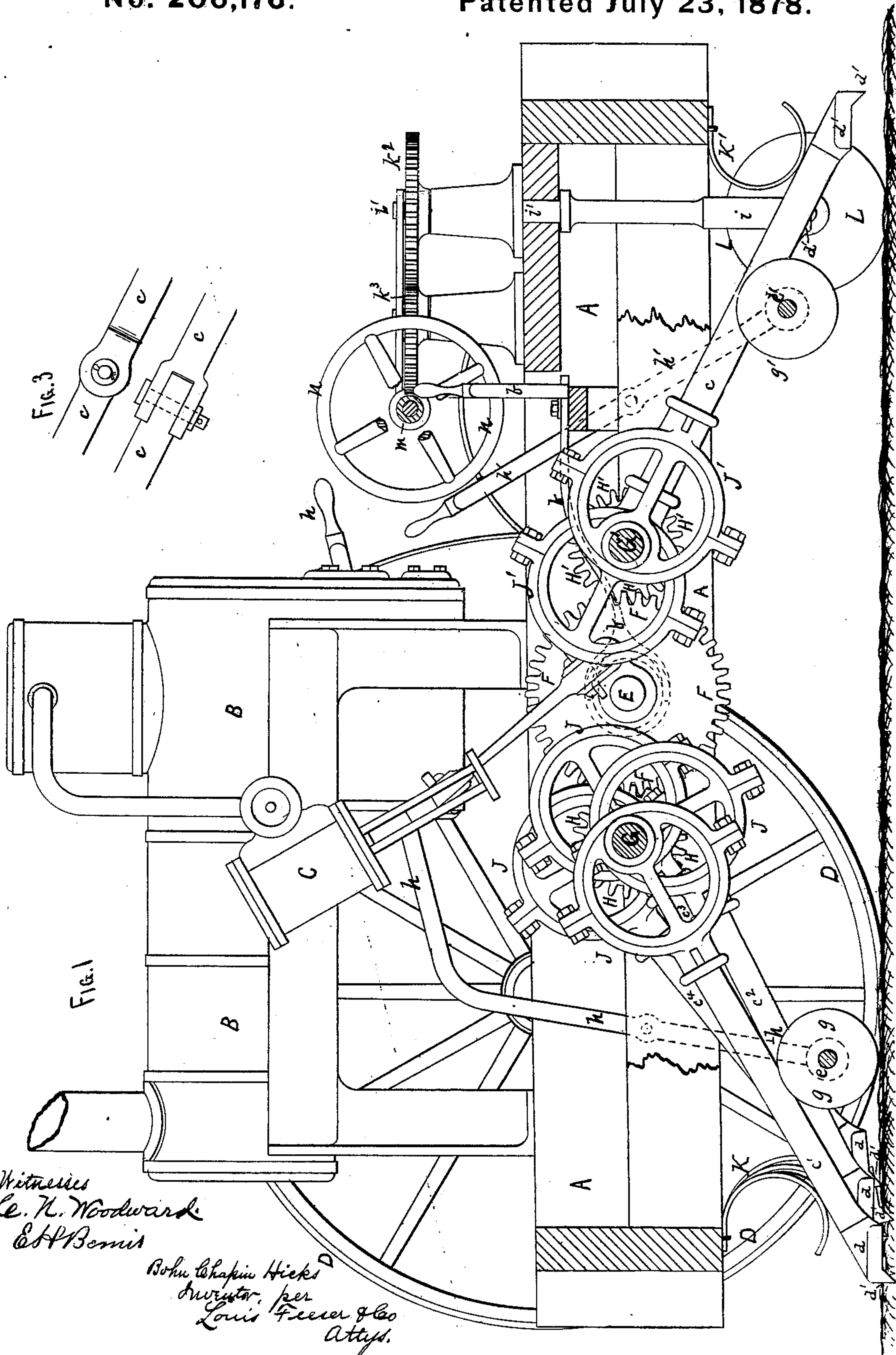


B. C. HICKS.
Road-Engine.

No. 206,176.

Patented July 23, 1878.



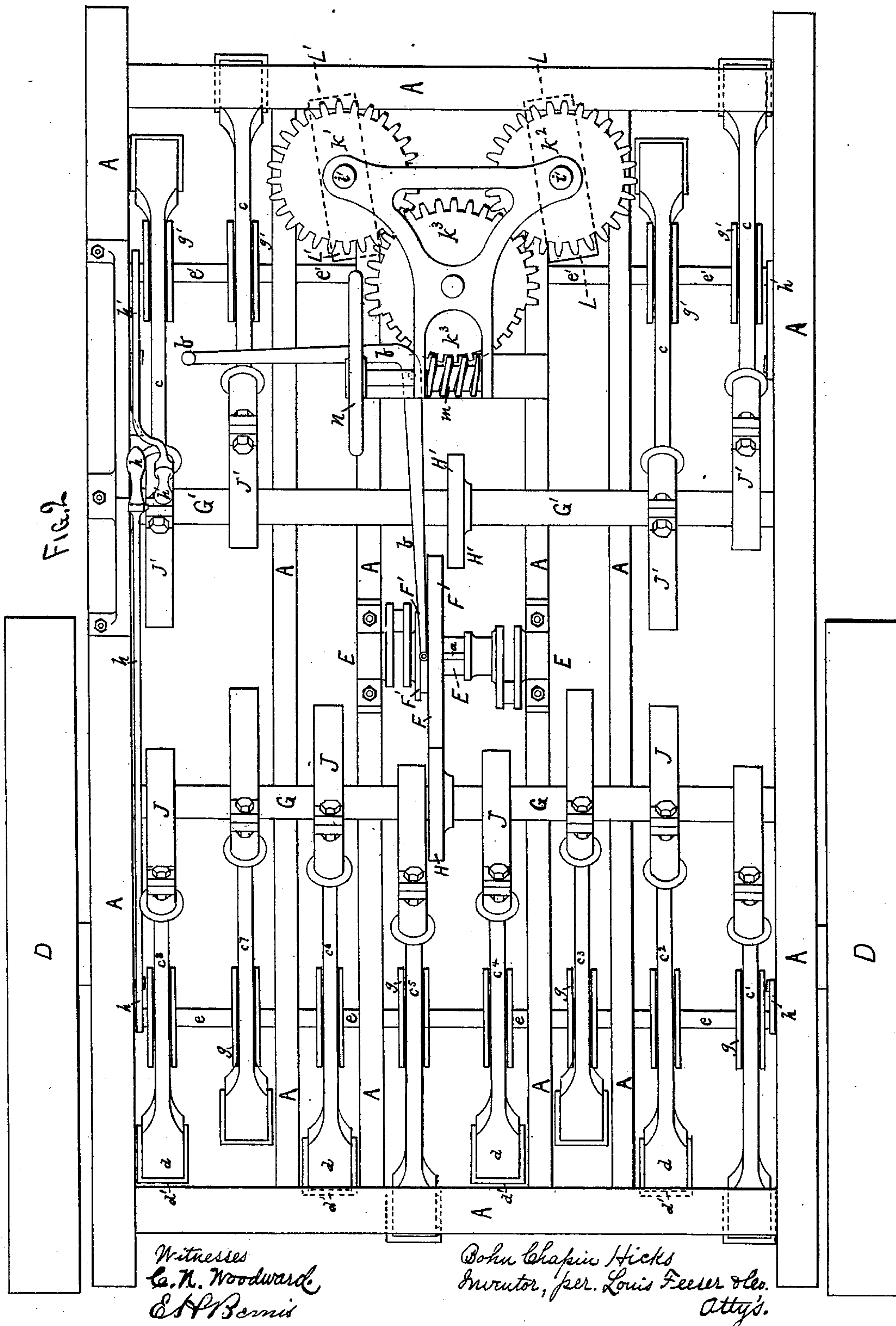
Witnesses
C. H. Woodward
Edw. Bernis

Bohn Chapin Hicks
Inventor, per
Louis Freese & Co
Atty.

B. C. HICKS.
Road-Engine.

No. 206,176.

Patented July 23, 1878.



UNITED STATES PATENT OFFICE.

BOHN C. HICKS, OF ROSE TOWNSHIP, RAMSEY COUNTY, MINNESOTA.

IMPROVEMENT IN ROAD-ENGINES.

Specification forming part of Letters Patent No. **206,176**, dated July 23, 1878; application filed March 6, 1878.

To all whom it may concern:

Be it known that I, BOHN CHAPIN HICKS, of Rose township, in the county of Ramsey and State of Minnesota, have invented certain new and useful Improvements in Road-Motors, which invention is fully set forth in the following specification and accompanying drawings, in which—

Figure 1 is a sectional side elevation. Fig. 2 is a plan view, with the boiler and engines and the platform removed. Fig. 3 is a detail view of a variation in the form of the pushing-levers.

This invention relates to machines known as "road motors," for the purpose of hauling loads or trains of wagons on common streets or roads, and for use on farms, &c.; and consists in the combination and arrangement of parts hereinafter described, and forming the subject of the claims.

A is the frame, upon which the boiler B and one or more engines, C, are mounted, and D D the main supporting-wheels.

E is a main driving-shaft, to which the engines are connected, and which is provided with a gear-wheel, F, and clutch F', the wheel and clutch being connected together and sliding upon a feather, *a*, upon the shaft E, the clutch being operated by a lever, *b*.

G G' are two shafts running across the machine parallel to shaft E, and provided with gears H H, which are acted upon alternately by the gear F through the clutch and lever F' *b*.

J J are a series of cams upon the shaft G, which operate a number of pushing-levers, *c*¹ *c*² *c*³ *c*⁴ *c*⁵ *c*⁶ *c*⁷ *c*⁸, which are provided with feet *d* and toes or points *d'*, which prevent their slipping. These cams are arranged upon the shaft in the form shown, so that the first and fifth (*c*¹ and *c*⁵) levers act together, and the second and sixth (*c*² and *c*⁶) act together, and so on throughout the set, thereby securing a spiral movement to the feet, so that there is a direct pressure upon two of the levers and a partial pressure upon the remainder at all points of the stroke.

J' J' are another set of cams upon the other shaft, G', which act in the same manner as J J, to operate a series of pushing-levers, *c* *c*,

the two sets of cams enabling the machine to be moved backward or forward at pleasure.

e e' are two shafts running across underneath the levers *cc*¹, and provided with grooved pulleys *g g'*, whose flanges are made wide enough to embrace the levers at all points of their strokes, and act as guides and stops, to prevent them moving sidewise.

Another use for the pulleys *g g'* is to serve as lifters to raise the feet out of the ground at the back strokes, and prevent them from dragging through the ground and clogging up. They also cause the levers to make a stepping motion, which is very necessary to the perfect operation of the machine. These shafts *e e'* are pivoted to levers *h h'* at their ends, by which they may be raised or lowered, thus causing the pulleys *g g'* to serve the three-fold purpose of supports or guides to the levers, as elevators, and as step-formers to the same.

K K' are springs upon the levers *c c*¹, to keep the feet down upon the ground, as well as to prevent jarring in the event of using upon even ground.

L L are two small wheels, which support the front end of the machine by means of yokes *i*, whose upper portions consist of shafts *i'*, and are supplied with gear-wheels *k*¹ *k*², which are connected by a third gear, *k*³, to each other. This third gear has one-half its teeth made to fit a worm, *m*, operated by a wheel, *n*, whereby the wheels L L may be turned in either direction and the machine guided either way.

By this arrangement a very simple and positive steering apparatus is produced, by which both wheels L L may be operated at the same time by one movement of the wheel *n*. By this arrangement the wheels L L are mounted independently, and yet are operated by one movement of the wheel *n*, so that an accident to one will not affect the other. I thus produce an apparatus that can be used as a motor to draw loads on common streets or roads, or that can be used about farms in plowing or other heavy work.

Any desired form of feet may be used on the pushing-levers, as I am aware that different forms will be required for different kinds of ground. The levers may be provided with a joint, as shown in Fig. 3, so that in case of

breakage of the flanges of rollers *g* or *g'* the cams will not be affected by any side strains.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The combination, with the levers *c*, operated by the cams *J'*, of the grooved guiding-rollers *g'*, made adjustable by the shaft *e'* and levers *h'*, in the manner and for the purpose substantially as hereinbefore specified.

2. The combination, with the pushing levers,

actuated by the cams, of the springs *K*, arranged and operated substantially as hereinbefore specified.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

BOHN CHAPIN HICKS.

Witnesses:

C. N. WOODWARD,

LOUIS FEESER.