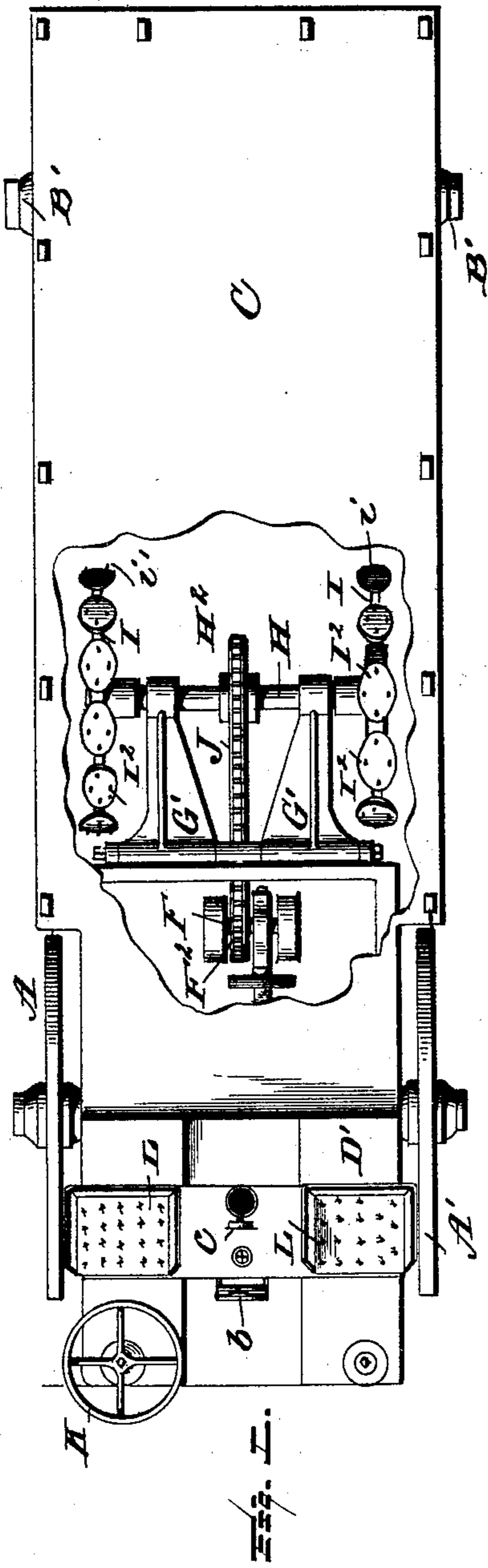


(No Model.)

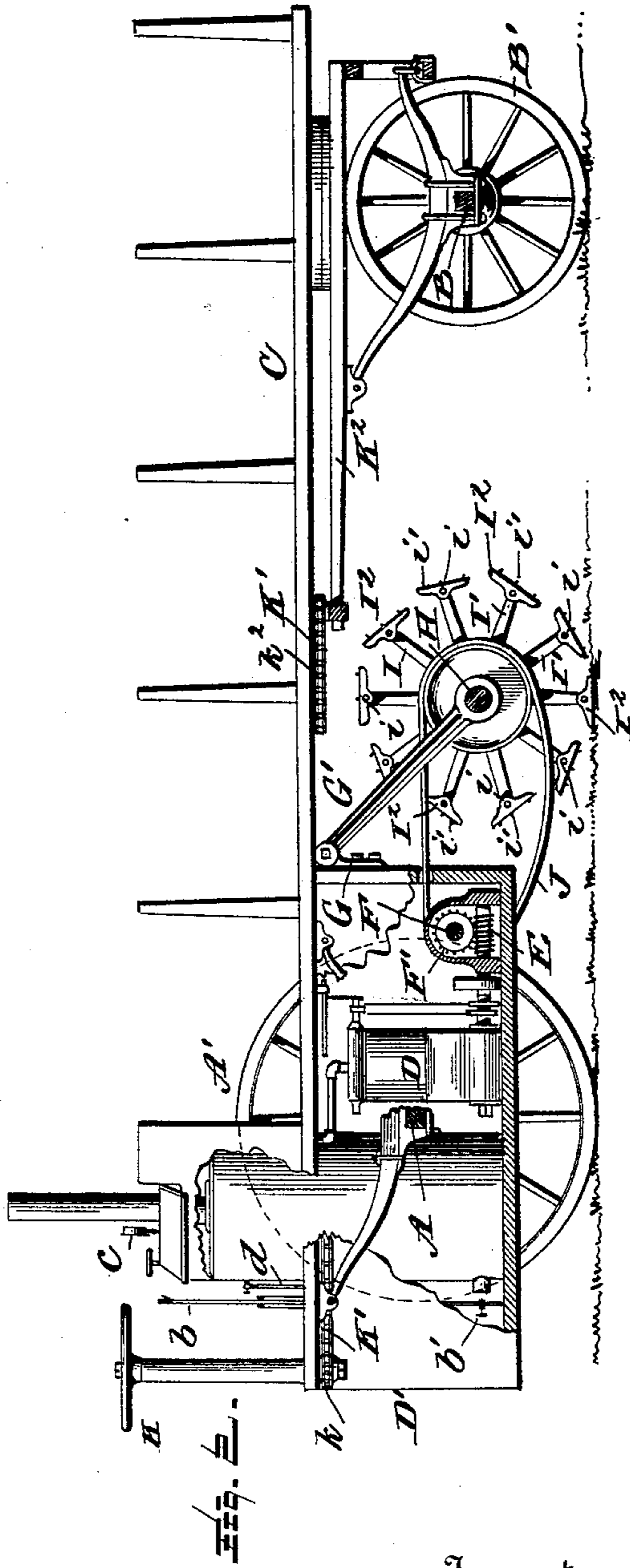
W. E. RICHARDSON.  
TRACTION ENGINE.

No. 480,626.

Patented Aug. 9, 1892.



Witnesses  
L. C. Hills.  
E. A. Bond.



Inventor:

W. E. Richardson,  
By E. B. Stocking  
Attorney

# UNITED STATES PATENT OFFICE.

WILBER E. RICHARDSON, OF MILWAUKEE, WISCONSIN.

## TRACTION-ENGINE.

SPECIFICATION forming part of Letters Patent No. 480,626, dated August 9, 1892.

Application filed December 12, 1891. Serial No. 414,826. (No model.)

*To all whom it may concern:*

Be it known that I, WILBER E. RICHARDSON, a citizen of the United States, residing at Milwaukee, in the county of Milwaukee and State of Wisconsin, have invented certain new and useful Improvements in Traction-Engines, of which the following is a specification, reference being had therein to the accompanying drawings.

10 This invention relates to certain new and useful improvements in traction-engines; and it has for its objects, among others, to provide a simple and cheap improved mechanism applicable to the various styles of conveyances, such as drays, trucks, wagons, sleighs, rail-  
15 cars, and the like. I arrange the traction-wheels, which are of novel construction, so that they will tend to lift the load as they propel the truck forward. I pivot the feet so that they  
20 will automatically adjust themselves to the road-bed over which the wagon is traveling. I improve generally upon this class of devices.

Other objects and advantages of the invention will hereinafter appear, and the novel  
25 features thereof will be specifically defined by the appended claims.

The invention is clearly illustrated in the accompanying drawings, which, with the letters of reference marked thereon, form a part  
30 of this specification, and in which—

Figure 1 is a top plan, with parts broken away, showing my improved vehicle. Fig. 2 is a side elevation with parts in section and portions broken away.

35 Like letters of reference indicate like parts in both views where they occur.

Referring now to the details of the drawings by letter, A designates the front axle; A', the front wheels; B, the rear axle; B', the  
40 rear wheels, and C the platform or bed of the wagon, all of which may be of any well-known or approved form of construction.

D is an engine of known construction suitably mounted at the front end of the platform  
45 and arranged within the box or housing D', and E is a worm-shaft driven by suitable connections from the engine.

F is a shaft suitably journaled in bearings and arranged transversely of the platform,  
50 and upon this shaft is the worm-gear F', which works in the worm E, as seen in Fig. 2, the

worm and worm-gear being located within a suitable box or housing, as seen in both views. On the shaft F is a sprocket-wheel F<sup>2</sup>.

G are brackets secured to the rear of the  
55 engine-housing, as seen in both views, and G' are arms hinged in any suitable manner to these brackets, so as to turn freely on their hinges or pivots, and loosely held in these arms at their lower ends is the cross-  
60 shaft H, which at each end carries the traction or propeller wheel I, which consists of a rimless wheel with radial spokes I', to the outer ends of which are hinged or pivotally  
65 connected, as at i, the shoes or feet I<sup>2</sup>, the acting faces of which are flat and are preferably provided with spurs i', as seen best in Fig. 2. The arms G' extend at an angle, as  
seen in Fig. 2, and on the shaft H is the large sprocket-wheel H<sup>2</sup>, around which and around  
70 the sprocket-wheel F<sup>2</sup> passes the sprocket-chain J, by which motion is imparted to the shaft H from the shaft F, as will be readily understood. The arms G' are each independent  
75 of the other, so that either wheel may automatically adjust itself to any unevenness in the ground over which it travels.

The engine, as well as the wheels I, may be reversed in any suitable manner, as by a link motion of known construction operated by  
80 the lever b.

The boiler may be fed with an oil-atomizer, as seen at b', or otherwise, the amount of steam being seen by the gage c and the water by the gage d.  
83

The wagon is designed to be steered by the hand-wheel K or other equivalent means, the shaft of which is provided with a sprocket-wheel k, around which passes the sprocket-chain K', which also passes around the sprock-  
90 et-wheels k<sup>2</sup>, and connected with some means on the tongue K<sup>2</sup>, so that turning the hand-wheel in one direction or the other steers the vehicle in the desired direction. The hand-wheel is made detachable, so that it may be  
95 changed from one side to the other, as may be desired. The driver's seat L is arranged with relation to the hand-wheel and the lever and other parts to be manipulated so that all may be readily operated without leaving the seat,  
100 whereby the operator has the device under complete control.

The propelling mechanism is so connected to the wagon and to the propeller-wheels as to tend to lift the load, as well as force it ahead when the power is applied. By lifting the load the traction is lightened on the supporting-wheels, and the driving-wheels are caused to take a better hold on the road-bed, which will tend to keep them from slipping.

Modifications in detail may be resorted to without departing from the spirit of the invention or sacrificing any of its advantages. Instead of steam, electricity may be employed as the motive power.

What I claim as new is—

1. The combination, with the platform, of the independently-pivoted arms extending at an angle therefrom and having shaft-bearings, and the rotatable traction-wheels carried by a shaft held in said arms, as set forth.
2. The combination, with the platform and the independently-pivoted arms, of the rotatable traction-wheels carried by a shaft held in said arms, a sprocket-wheel on said shaft, and

means for imparting motion thereto, as set forth.

3. The combination, with the motive power, of a worm-shaft operated therefrom, a worm-gear engaging the worm-shaft, the independently-pivoted inclined arms, the traction-wheels carried by a shaft journaled in bearings in said arms, and mechanism intermediate the worm-gear and shaft of said wheels for imparting motion thereto, as set forth.

4. The combination, with the engine, of the worm-shaft operated therefrom, the worm-gear meshing with the worm-shaft, the pivoted arms carrying the traction-wheels, the sprocket-wheel on the shaft of the wheels, the sprocket-wheel on the shaft of the worm-gear, and the connecting-chain, as set forth.

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

WILBER E. RICHARDSON.

Witnesses:

H. McLAUGHLIN,  
J. S. HATHAWAY.