No. 875,851. PATENTED JAN. 7, 1908.

R. RUSSELL.

TRACTION ENGINE.

APPLICATION FILED FEB. 27, 1905.

4 SHEETS—SHEET 1.

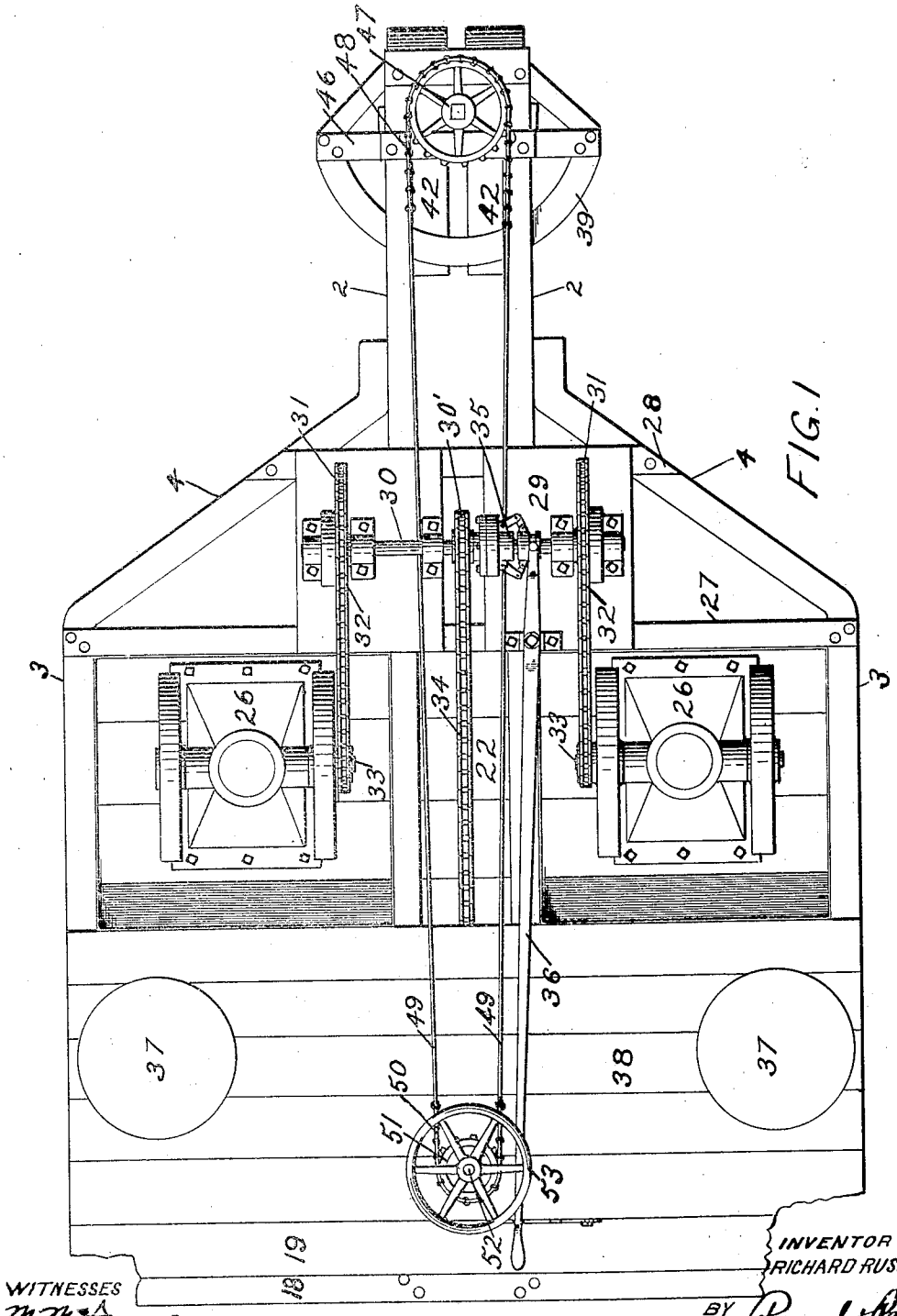


FIG. 1

WITNESSES

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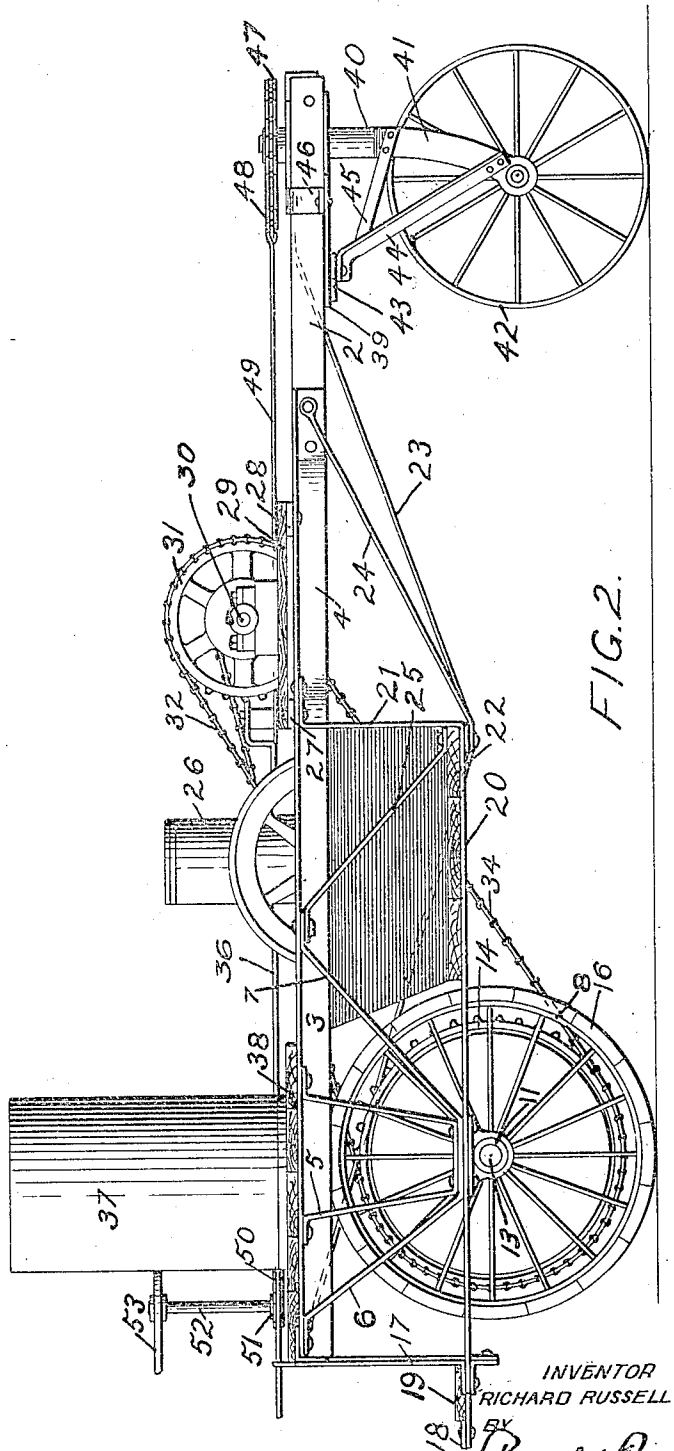


FIG. 2.

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4 SHEETS—SHEET 3.

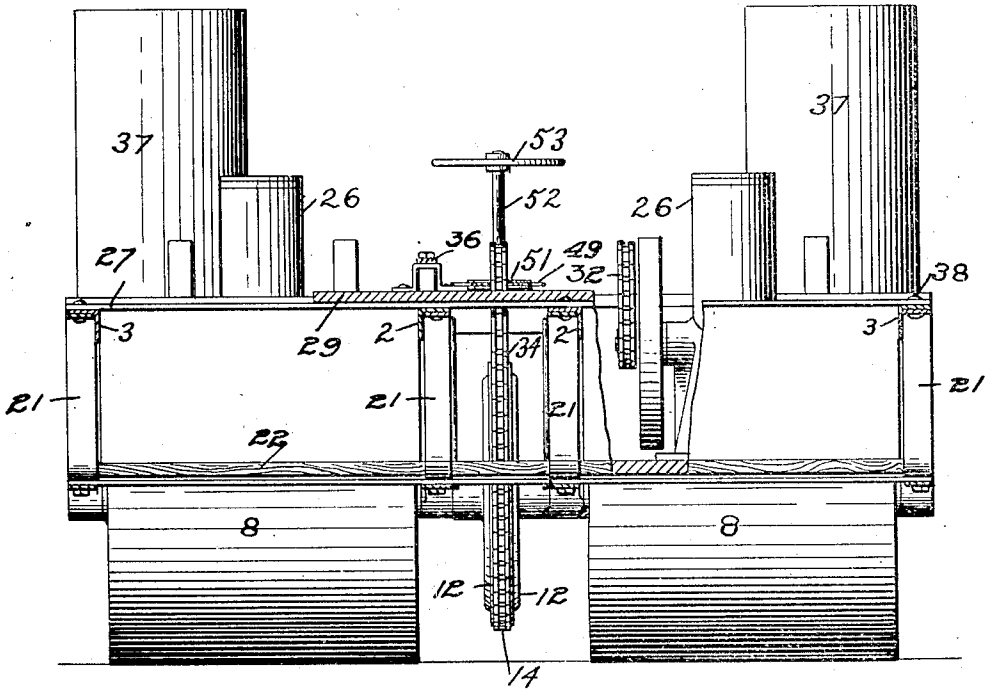


FIG. 3.

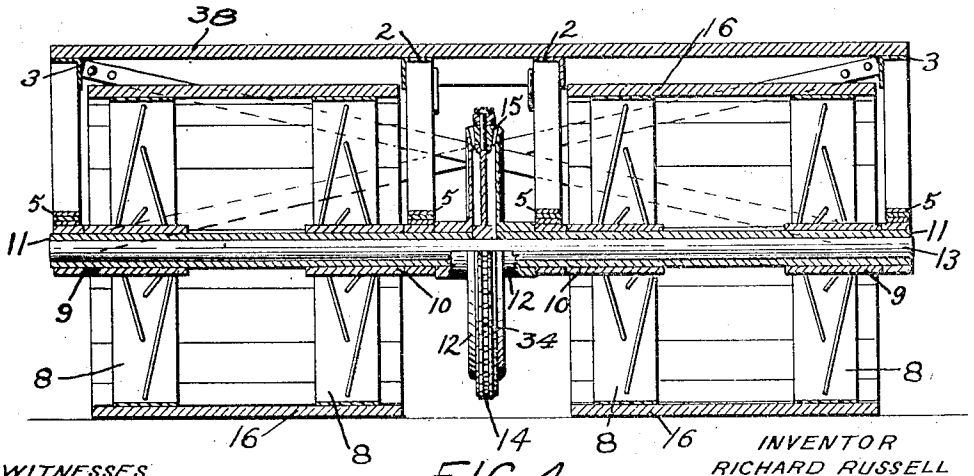


FIG. 4.

WITNESSES

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4 SHEETS—SHEET 4.

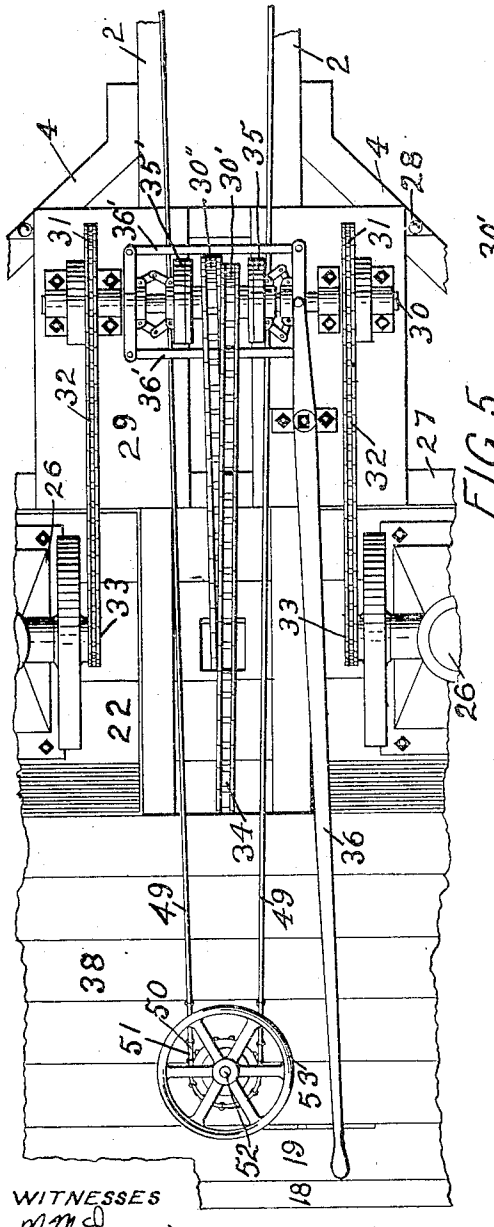


FIG. 5.

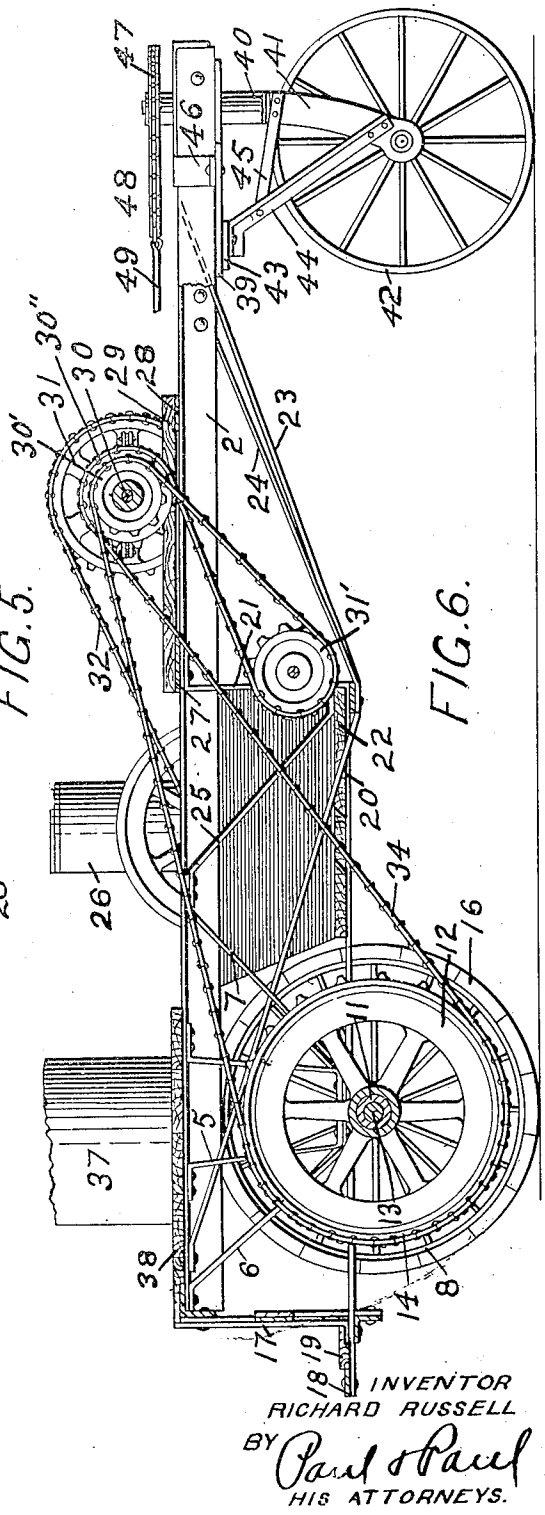


FIG. 6.

WITNESSES

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UNITED STATES PATENT OFFICE.

RICHARD RUSSELL, OF STEPHEN, MINNESOTA.

TRACTION-ENGINE.

No. 875,851. Specification of Letters Patent. Patented Jan. 7, 1908.

Application filed February 27, 1905. Serial No. 247,571.

To all whom it may concern:

Be it known that I, RICHARD RUSSELL, of Stephen, Marshall county, Minnesota, have invented certain new and useful Improvements in Traction-Engines, of which the following is a specification.

The object of my invention is to provide a traction engine designed for use principally in drawing a gang plow, but adapted for drawing a harrow, cultivator, or any other piece of farm machinery, from place to place.

A further object is to provide a traction engine of simple but very strong and durable construction, and one that can be operated economically and will have great power.

Other objects of the invention will appear from the following detailed description.

The invention consists generally in various constructions and combinations, all as hereinafter described and particularly pointed out in the claims.

In the accompanying drawings forming part of this specification, Figure 1 is a plan view of a traction engine embodying my invention. Fig. 2 is a side elevation of the same. Fig. 3 is a rear end view. Fig. 4 is a transverse vertical section showing the manner of mounting the traction wheels. Fig. 5 is a fragmentary plan view showing a modified construction to allow the engine to be driven backward. Fig. 6 is a longitudinal vertical section showing the application of the modification illustrated in Fig. 5.

In the drawing, 2 represents a pair of angle bars arranged side by side and extending through the middle of the machine from one end to the other and separated a suitable distance from each other. Similar bars 3 form the sides of the machine frame at the rear, and have inwardly turned forward ends 4 that meet the bars 2 and are secured thereto in the rear of the forward wheels. Brackets or hangers 5 are bolted to the rail 3 upon each side of the machine, and are braced in front and in the rear by bars 6 and 7. Similar hangers depend from the bars 2 upon each side of the middle line of the machine. Traction wheels 8 having hubs 9 and 10 are supported in bearings in said brackets, and sleeves 11 are provided on each side of the machine and have their ends fitting within the hubs 9 and 10 and extending through the boxes of the brackets 5. The inner ends of these sleeves project beyond the brackets and have beveled gears 12 secured thereon, one gear being movable independently of the corresponding gear on the other sleeve. The traction wheels are free to turn with these sleeves in either direction. Within the sleeves 11 is a shaft 13 extending through them from one side of the machine to the other, and at a point near the middle of the machine between the contiguous ends of the sleeves a sprocket wheel 14 is secured on said shaft, and provided with pinions 15 at intervals that engage the gears 12 forming therewith and with the sprocket a differential gear that allows a variation in movement of the traction wheels to compensate for the difference in travel when the machine is turning.

The traction wheels may be made of any suitable size, and have a broad bearing surface and are preferably provided with peripheries made up of a series of staves 16, as shown in Fig. 2. The contacting surface of these wheels with the ground will insure sufficient friction to prevent slipping in drawing a load.

In the rear of the wheels hangers 17 are provided secured at their upper ends to the side and middle rails and connected by a cross bar 18 and a foot board 19, whereon the operator may stand and direct the machine. Bars 20 are connected at their rear ends to the hangers 17 and cross bar 18 and extend beneath the brackets 5 and are secured thereto and project horizontally in front of the wheels and have upwardly turned ends 21 secured to the side and middle rails. These bars 20 are on nearly the same level as the wheel axles, and form a flat horizontal support for a platform 22 that extends across the machine from one side to the other in front of the wheels and considerably below the top of the machine. Brace rods 23 and 24 connect the bars 20 with the forward ends of the rails 2 and 4. Braces 25 also connect the bars 20 with the upper ends of the braces 7. The platform 22 is thus rigidly braced and supported, and forms a substantial support for the engines 26 that are mounted thereon upon each side of the middle rails 2. Cross bars 27 and 28 connect the rails 4 in front of the engines, and stiffen and brace the forward portion of the machine frame. A platform 29 is supported on the bars 27 and 28, and a shaft 30 has bearings on said platform and provided with sprocket wheels 31 connected by chains 32 with the driving shafts 33 of said engines. The chain 34 connects a sprocket 30′ loosely mounted on the shaft 30 with the sprocket wheel 14, and through this

chain and wheel power is transmitted to drive the traction wheels.

I prefer to provide a clutch connection 35 on the shaft 30 operated by means of a lever 36 to enable the operator to throw one engine out of connection with the shaft for the purpose of operating the machine with the other engine. Water tanks 37 are mounted on a platform 38 on the rear end of the machine, and connected by suitable pipes (not shown) with their respective engines.

By placing an engine and its water tank on each side of the machine I am able to not only distribute the weight and more equally balance the machine, but I can keep one engine in reserve, if necessary, and make use of it, should the other one break down, or continue to run with one, should the other engine become disabled. Furthermore, by placing the engines low down on the machine frame I am able to bring a large percentage of the weight near the ground, and thereby render the machine much more stable.

The forward end of the machine is provided with a curved angle bar 39 secured to the under side of the frame. A standard 40 is arranged in front of the bar 39 and projects above the frame, and has three depending legs 41 between which wheels 42 are mounted, one between the middle leg and the outer one on each side. A curved flat plate 43 is adapted to bear on the under side of the bar 39, and is connected to said legs by braces 44 and 45. A cross bar 46 connects the ends of the bars 39 and is rigidly secured thereto and also to the rails 2. A sprocket wheel 47 is mounted on the upper end of the standard 40 and provided with a chain 48 that has its ends connected by rods 49 with a similar chain 50 on a sprocket wheel 51 secured on a steering post 52 mounted on the rear of the machine near the foot board and the lever 36 and provided with an operating wheel 53. By turning this wheel back and forth the operator standing on the foot board can swing the forward wheels in either direction and guide the machine.

It is frequently desirable to back a traction engine during its operation. For this purpose I provide a second sprocket 30'' loosely mounted on the shaft 30 and carrying the chain 34, which also passes down around an idle sprocket 31' arranged beneath the platform 29. A second clutch 35' is provided in connection with the sprocket 30'', and links 36' connect the lever 36 with the clutch 35' to enable the operator to operate the clutches alternately to throw one in and the other out of its working position. If it is desired to run the engine forward the operator will move the lever in one direction operating one clutch and locking one of the sprockets on the shaft 30 to transmit the power therefrom to the traction wheels. If it is desired to run the engine backward the movement of the lever is reversed, and the clutch that causes forward movement thrown out of gear with its sprocket, while the other clutch is thrown into operative position with respect to its sprocket. This construction enables the operator to maintain perfect control over the traction engine running it forward or back as desired without stopping the motive power.

I claim as my invention:

1. The combination, with a frame having a forward steering wheel and rear traction wheels, of gas engines supported beneath said frame in front of and contiguous to said traction wheels one on each side of the machine, a driving shaft mounted on said frame between said engines and the steering wheel and connected with said engines and belted to said traction wheels, substantially as described.

2. The combination, with a frame having an oscillating steering wheel at its forward end, of a shaft supported beneath and at the rear end of said frame, a sprocket secured on said shaft and provided with a series of pinions rotatably mounted below the periphery of the sprocket and carried by the sprocket in its rotation, traction wheels mounted on said shaft on each side of said sprocket and having hubs provided with gears that engage said pinions, and a motive power mounted on said frame and connected with said shaft sprocket, substantially as described.

3. The combination, with a frame having a steering wheel, of traction wheels mounted in bearings on said frame, a driving shaft, a motive power connected with said shaft, sprockets loosely mounted on said driving shaft, clutch mechanisms provided on said shaft and arranged to alternately lock said sprockets, an idle sprocket, and a drive belt connecting said sprockets and said traction wheels whereby the operation of said clutches allows said traction wheels to be driven forward or backward, substantially as described.

4. A traction engine comprising parallel centrally arranged bars 2, side bars 3 having inwardly turned forward ends connected to said centrally arranged bars, cross bars connecting said bars 2 and said side bars, a platform mounted on said bars, a steering wheel provided at the forward ends of said bars 2, traction wheels at the rear end of said bars, a driving shaft connected with said traction wheels, and a motive power connected with said driving shaft.

5. A traction engine comprising the middle angle bars 2, the side angle bars 3 having inwardly turned forward ends 4, secured to said bars 2, a steering wheel mounted on said middle bars, traction wheels mounted in bearings on said bars, a driving shaft, and engines supported beneath said bars in front

of said traction wheels and connected with said driving shaft, and operative connections between said driving shaft and said traction wheels.

6. In a traction engine, the combination, with a frame, of hangers 5 depending therefrom, braces 6 and 7 connecting said hangers with said frame, a shaft having bearings in said hangers, traction wheels mounted on said shaft, platforms suspended below said frame in front of said wheels, engines mounted on said platforms, a driving shaft connected with said engines and having operative connections with said traction wheels, substantially as described.

7. In a traction engine, the combination, with a frame having a steering wheel at its forward end and two traction wheels at the rear end, of a driving shaft connected with said traction wheels, two engines supported on said frame, one in front of each traction wheel and connected with said driving shaft, a foot board provided at the rear end of said frame, a steering wheel mechanism connected with said steering wheel, and an operating lever arranged to control the transmission of power from said driving shaft to said traction wheels, and said lever and said steering mechanism being contiguous to said foot board.

In witness whereof I have hereunto set my hand this 22nd day of February 1905.

RICHARD RUSSELL.

Witnesses:

RICHARD PAUL,

C. MACNAMARA.