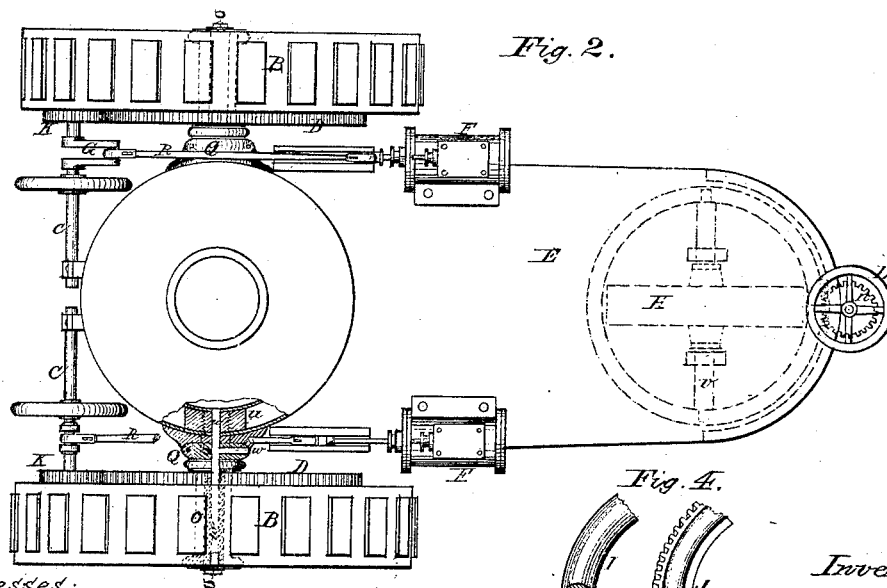


No. 112,135.

*Fig. 1.*



J. B. Brecht  
L. Freund

*Inventor:*

George W. Fitts

# UNITED STATES PATENT OFFICE.

GEORGE W. FITTS, OF OBERLIN, OHIO.

## IMPROVEMENT IN TRACTION-ENGINES.

Specification forming part of Letters Patent No. **112,135**, dated February 28, 1871.

I, GEORGE W. FITTS, of the village of Oberlin, in the county of Lorain and State of Ohio, have invented an Improved Steam-Vehicle, of which the following is a specification:

The nature of my invention consists in the construction and arrangements of the various parts of a steam-vehicle in such a manner as to best permit the application of steam-power to the same for the various purposes that a movable power of this kind may be applied to, such as moving over common roads, hauling heavy loads, plowing and other agricultural work, acting as a fire-engine, and in various other places too numerous here to mention.

The two driving-wheels of this vehicle are arranged each side of a vertical steam-boiler by means of axles, which are firmly attached to the sides of the same, permitting the wheels to revolve upon these axles. These axles are made hollow at the center, so as to permit the passage of water through them, for the double purpose of keeping them cooled from the heat of the boiler, and at the same time furnishing a supply of water to the boiler.

The third or guide wheel of the vehicle is a peculiar device, and is so arranged that its use will give guidance and direction to the movements of the whole machine.

The water-tank, which is formed of iron, carries a supply of water for the boiler, and forms the body or frame of the vehicle. It is bolted firmly at one end to the lower and front side of the boiler, and at the other end it rests upon the guide or third wheel, thus connecting the three wheels and boiler, at the same time forming a bed or floor for the engines and gearing, with room also for the engineer.

The boiler is so arranged that it may be heated with wood, coal, or coal-oil. Thus all is arranged so as to give the greatest power, compactness, lightness, economy, simplicity, and efficiency needed in a machine of this kind.

### *Description of the Accompanying Drawing.*

Figure 1 is a side view of a machine embodying my invention. Fig. 2 is a surface view of the same. Figs. 3 and 4 are sectional views of the parts.

A is the steam-boiler, constructed in a cylindrical form, and standing vertically when in

its place as attached to the driving-wheels and water-tank. It has an upper and middle head, the lower end being fitted with a fire-box, around which, and between it and the outer shell of the boiler, is a space fitted for water, which opens into and connects with the interior or steam chamber of the same. Through the middle head are inserted small tubes or flues, which pass down into the fire-box, with closed lower and open upper ends. They are supplied with water from the boiler, and are heated in the fire-box. Through the middle and upper heads passes a flue, opening at the lower end into the fire-box and at the upper end into the air. This flue carries off the smoke. To the sides of this boiler are firmly attached the axles O, Fig. 2, on which the driving-wheels B, Fig. 2, revolve. In the rear, and below the axle, are placed the furnace-door S and fuel-box T.

B B are the driving-wheels. They are substantially made with broad faces and peculiar construction, (for description of which reference is made to my application for Letters Patent for the same, made January 26, 1871,) and are made to revolve upon the axles O O. Upon the sides of these wheels next to the boiler are firmly attached large pinion-wheels D D, Fig 2, by which means the power of the engine is communicated to them, causing them to move over the surface on which they rest.

C C are the driving-shafts. These shafts are provided with small pinon-wheels K K at one end, and a crank, G, at or near the other, and are also arranged to receive balance-wheels or gearing. The pinion-wheel K engages with the large pinion-wheel D upon the driving-wheel B, and the crank G is connected, by the pitman R, to the engines F. These shafts C revolve upon bearings firmly attached to the boiler, and are located in the rear and above the axles of the driving-wheels, as at C, Fig. 2.

D D are the large pinion-wheels, rigidly attached to the driving-wheels B B upon the surface next to the boiler, and are a little less in diameter than the driving-wheels. They receive the motion of the engines by means of the shafts C, and small pinon-wheels K, and pitmen R, thus transferring the same to the driving-wheels.

S is the water-tank. This tank is formed

of galvanized or tinned iron, and of sufficient thickness and strength to form the bed or floor of the machine, carry the water for the boiler, sustain the engines and gearing, and connect the guide-wheel with the driving-wheels and boiler. It is placed in a horizontal position in front of the boiler E, Fig. 1, the end next to the same being fitted and bolted firmly to the side of the same. The front end rests upon and is bolted to the upper circle, I, of the guide-wheel, as at H, Fig. 1. The interior of this tank is partitioned with sheets of perforated tinned iron, to prevent the water from washing about when the steamer is in motion. It has apertures in the top for receiving and discharging the water.

F F are the engine-cylinders. They are placed on the top of the water-tank and near to the boiler, as at F F, Fig. 2, and near enough to the edge of the tank to permit the pitman R to work between the boiler and driving-wheel, so that it may connect with the driving-shaft C on the opposite side of the driving-wheel, as at R, Figs. 1 and 2. The steam is conveyed into these cylinders by a pipe from the top of the boiler, which is fitted with valves to regulate the flow of the same, and all other necessary gearing for the engines is connected therewith.

H is the guide or third wheel of the vehicle. It is substantially made, and may be of the same construction as the driving-wheels, and is about one-half their size. It revolves upon an axle, V, Fig. 3, which is bolted firmly at the ends to the lower surface of the circle J. This circle has a convex upper surface and a pinioned outer one, J, Fig. 4. On the upper surface of this circle is placed the circle I. This circle has a concave under surface, which fits the convex upper surface of the circle J, permitting the same to revolve in it, I, Fig. 4. These circles are held together by means of a standard, X, Fig. 3, that is attached to the axle V each side of the wheel H, Fig. 3, rising up and uniting over the same into a swivel-joint, Fig. 3, permitting it to revolve upon the same, this joint being suspended from the floor of the tank or frame E, which rests upon the circle I. This wheel H, with the circles I and J and axle V thus arranged, is placed under the front end of the water-tank E, Fig. 1, whose under surface is fitted to receive it, and is fastened firmly to the same, H, Fig. 1, and when thus placed may be revolved so as to guide the machine in any direction.

M is a shaft, furnished with a hand-wheel, L, upon one end, and a small pinion-wheel, N, at the other. This shaft is attached vertically to the front end of the water-tank, as at M, Fig. 1, by means of bearings which permit it to revolve. The small pinion-wheel N engages with the pinioned surface of the circle J. The hand-wheel L rises above the floor of the tanks. By revolving the wheel L the guide-wheel H is made to turn in any desired direction.

O O are the hollow axles, on which the driving-wheels rest and revolve. These axles are firmly attached to the sides of the vertical boiler A, one end passing through the same. This end is formed circular, and is threaded on the outer side and screws into a solid block, U, Fig. 2, fitted to receive it, and bolted firmly to the inside of the boiler. The other end is fitted for the reception of the hub of the driving-wheel o, Fig. 2. On the outer surface of the boiler, around this axle, is bolted a cap or shoulder, Q, Fig. 1. This cap has a circular opening, which just fits the axle, and acts as a rest for the same, Q, Fig. 2. This shoulder is perforated on the side next to the cylinders with an aperture, W, Fig. 2, of the same size of that in the axle, which passes through it, connecting with the hollow within the axle, thus forming an opening from the external surface of the axle and boiler to its internal surface, as at W, Fig. 2, forming a passage for the water to the boiler and keeping the axle cool.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is the following:

1. The arrangement, in a steam-vehicle, of the vertical boiler A, axles O, driving-wheels B, large pinions D, shafts and cranks C G, small pinions K, pitmen R, cylinders F, water-tank E, and steering apparatus H I J V, as herein described and set forth.

2. The combination of hollow axles O with the boiler of steam-vehicles, for the purpose of conveying water to the boiler, and for keeping said axles cool, substantially as set forth and described.

GEORGE W. FITTS.

Witnesses:

L. P. FREUND,  
T. C. BRECHT.