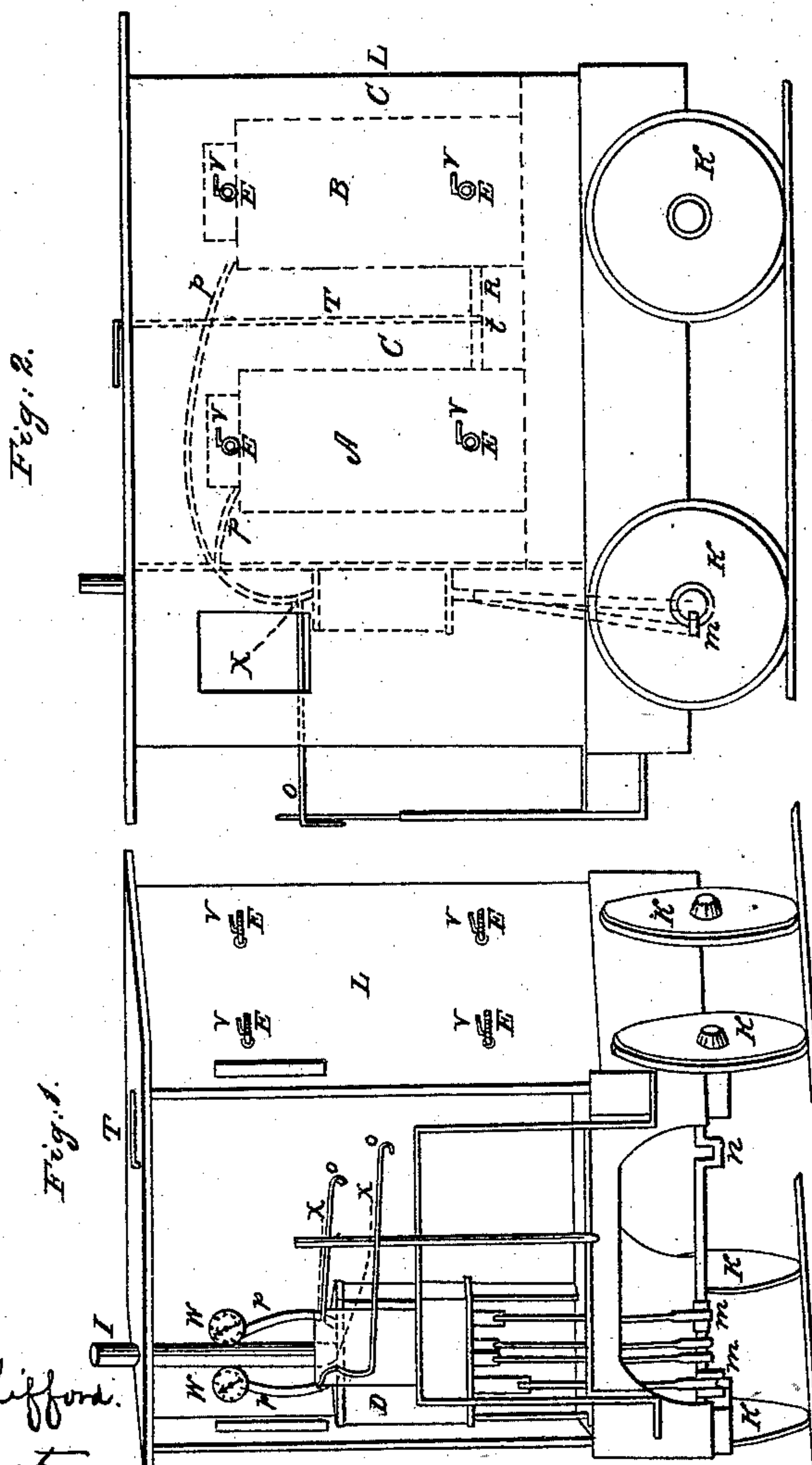
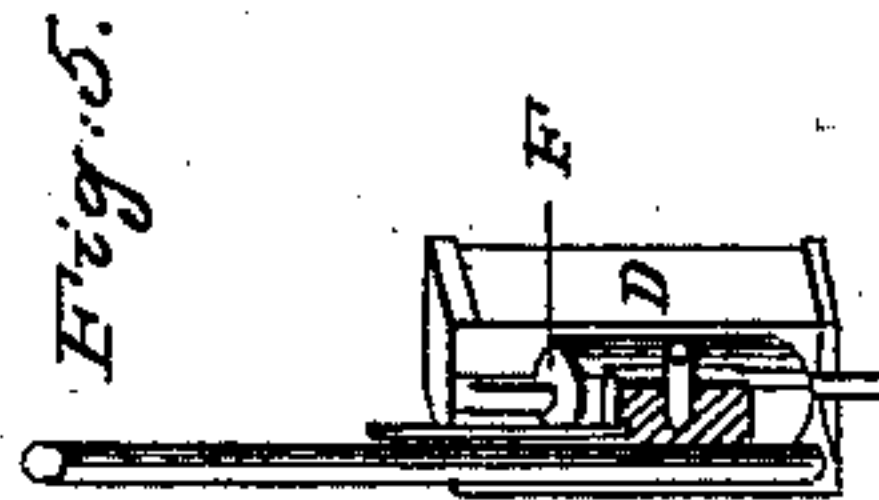
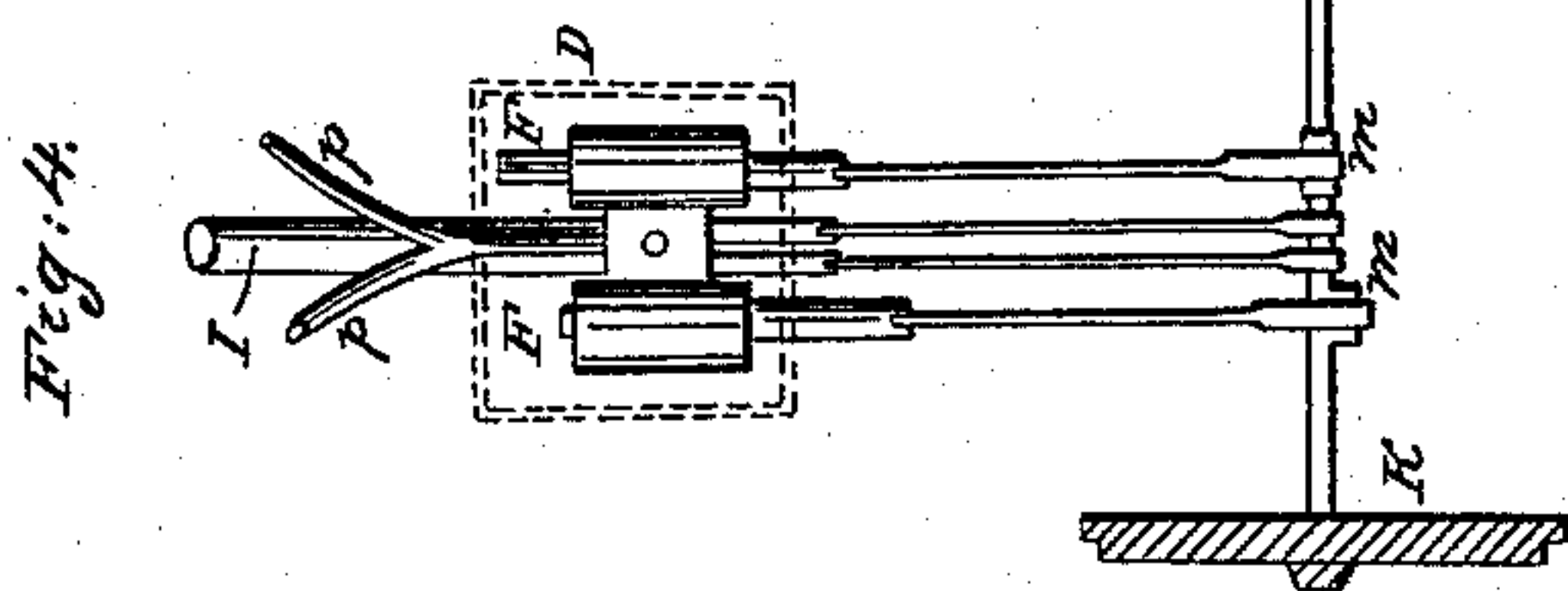
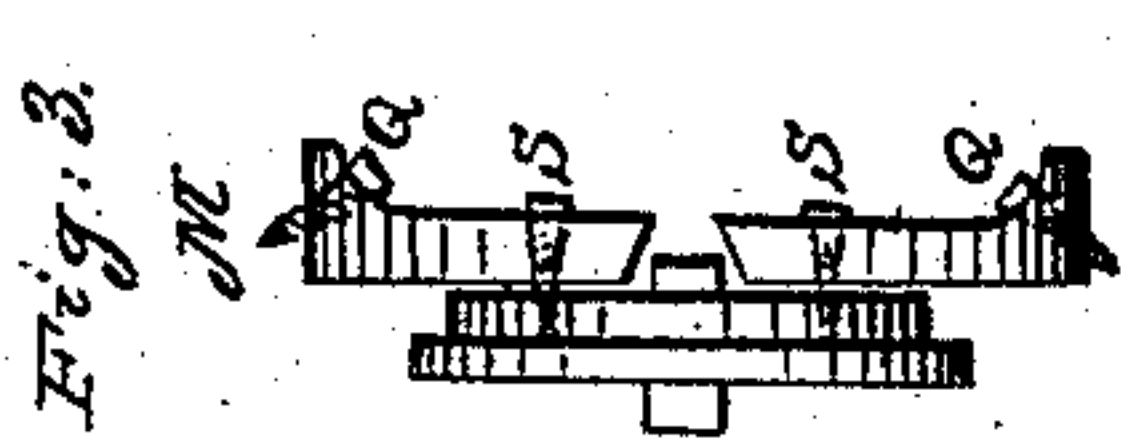


C. W. CAHOON.

Steam Engine.

No. 70,407.

Patented Nov. 5, 1867.



Witnesses:
Wm Henry Clifford.
Henry C. Houston.

Inventor:
Chas W Cahoon.

United States Patent Office.

CHARLES W. CAHOON, OF PORTLAND, MAINE.

Letters Patent No. 70,407, dated November 5, 1867.

IMPROVEMENT IN STEAM ENGINE.

The Schedule referred to in these Letters Patent and making part of the same.

TO ALL WHOM IT MAY CONCERN:

Be it known that I, CHARLES W. CAHOON, of Portland, in the county of Cumberland, and State of Maine, have invented certain new and useful Improvements in Propelling Carriages; and I hereby declare the following to be a full, clear, and exact description thereof, which will enable others to make and use my invention, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 shows a view in perspective of a carriage with my improvements thereon.

Figure 2 is a side elevation of the same.

Figure 3 is an edge view of my improved wheel, for the purposes hereinafter set forth.

Figure 4 is a view of the engines, and illustrates the method in which the same are employed to connect with the driving-wheels.

Figure 5 is a view of the casing broken open, and showing one of the cylinders and the exhaust pipe.

It is well known that carriages propelled by steam power in the streets of cities are very objectionable, in consequence of their liability of explosion, and the smoke and gases which arise from the fuel in producing the steam.

The object of this invention is to obviate these difficulties, and is attained by heating the water for making the steam at a stationary boiler under pressure, which boiler is separate from the carriage, and afterwards transferring the said heated water to the carriage, so that the heat remaining therein after it is thus transferred will act to produce steam to propel the carriage.

Another object of this invention is to retain the heat in the water for a considerable time after it is removed from the boiler, which is done by surrounding the tank or vessel containing it with a non-conducting substance. It is also important, when the motive power is constantly diminishing, that a reserved force should be at hand, and in order to obtain such a force an additional tank is placed upon the carriage, containing water heated and transferred as above, which is distinct from the other, and connected with the engine by a separate pipe and valve, so that its force may be let on separately from time to time, as desired.

Another object is to use the exhaust steam around the outside of the engines, for the purpose of keeping them warm, and thus preventing the condensation of the steam inside before it has done its duty, and this is accomplished by placing a box or casing outside of the engines, surrounding them, and leaving a space between them and the casing, into which the exhaust passage of the engines directly leads, and placing the lower end of the exhaust pipe into the lower part of the casing, so that the exhaust steam will first enter the casing and surround the engines before entering the exhaust pipe.

Another object of the invention is to enable a wheeled steam-carriage to be used when snow or ice is upon the ground, and to draw other carriages after it. This object is attained by attaching to the wheels of the carriage adjustable wheels, large in diameter, having broad peripheries, with adjustable sprockets therein.

L represents the body of the carriage, which is mounted on wheels, and consists of a closed wooden box, inside of which, upon its bottom, is placed a block of wood, which occupies about one-sixth of its height. Upon the top of this block are placed two tight iron tanks capable of sustaining pressure. These tanks are lettered A B. R is a pipe leading from one tank to the other, and having a valve, *t*, which has a handle, T, reaching up through the body L. These tanks also have a pipe, E, near the top of each, and the same near the bottom, which lead through and outside of the carriage body L, having valves V V V V. Extending from the tops of the tanks are pipes *p p*, which lead through the outside of the carriage to the trunk engines F F, in the front part, situated upon a platform. The connecting-rods of these engines are attached to cranks *m m*, at right angles to each other on the forward axle of the carriage. *k k* are the carriage-wheels. *n* is a crank in the axle for connecting the said axle with the hind axle by a rod, when desired, so that more traction may be obtained. C represents a filling of saw-dust between the tanks and the sides of the carriage, for the purpose of preventing the conduction of heat. D is a casing which encloses the engines, but is yet somewhat larger, so that there may be a space between. 1 is the exhaust pipe, which, instead of being connected with the exhaust passage of the engine, as is usual, reaches down below the same to nearly the bottom of the casing, so that the steam may first enter the casing and surround the engines before entering the exhaust pipe. W W represent steam-gauges, one to each pipe *p*, and attached directly over the engines, so that the pressure of steam in each tank may be

always known. $x x$ are valves in pipes $p p$ for regulating the passage of steam into the engines. $o o$ are handles to the said valves, which handles extend longitudinally to the extreme front of the carriage, and laterally, so that the engineer may have the handles of the valves in front of him, while his back is towards the engines. M is the adjustable wheel before referred to, attached to one of the ordinary carriage-wheels. This wheel M is made larger in diameter than the common wheel, and has a broad periphery extending outwards, into which are inserted adjustable sprockets $Q Q$, these sprockets having pointed ends, and reaching through the periphery, so that they may cause the wheel to have more tractive power. The sprockets are adjustable, so that they may be made to extend more or less, as desired. The wheel M is attached to the wheel k by means of screws $S S$, and each wheel of the carriage should have one of these adjustable wheels, to be attached when requisite.

The operation of my invention is this: Water is first heated at a stationary boiler under pressure up to a temperature of about 330° . This boiler has two pipes with valves in one end of it, to which are attached adjustable couplings, one of which pipes is placed near the lower part, and the other at about two-thirds of the height of the water-space. When it is desired to fill the tanks the carriage is brought alongside of the boiler, and the lower pipe in one of the tanks connected with the lower pipe in the boiler, by means of the adjustable couplings, the upper pipes of the two being connected likewise. The valves in the boiler and tank are then opened, so that the tank may be supplied thereby, and when supplied the valves of both are shut and the coupling disconnected, the carriage being then ready for duty. If both tanks are to be filled at the same time, then the valve t should be opened before connecting the tank and boiler, and after filling be immediately shut. The speed of the carriage is regulated by the valves $x x$.

One of the tanks may be used at a time and the other kept in reserve, or both can be used at once. The length of time during which the water will be available for motive power will depend upon its heat, and when that becomes too much reduced the tanks are to be replenished from the stationary boilers, which may, for use on street railways, be placed at either end of the line, or, for long roads, may be placed at distances to correspond with the quantity of water carried and the heat of the same.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. A carriage having a receptacle containing hot water under pressure, when the water has been heated at a place other than in or on the carriage, substantially as and for the purpose described.

2. I also claim the combination of a carriage, receptacle, and engine, substantially as and for the purpose described.

3. I also claim the combination of a non-conducting material with the receptacle upon the carriage, containing water heated and transferred as described, substantially as set forth.

4. I also claim a reserve-tank containing water heated and transferred as described, for the purpose and substantially as set forth.

CHAS. W. CAHOON.

Witnesses:

WM. HENRY CLIFFORD,

HENRY C. HOUSTON.