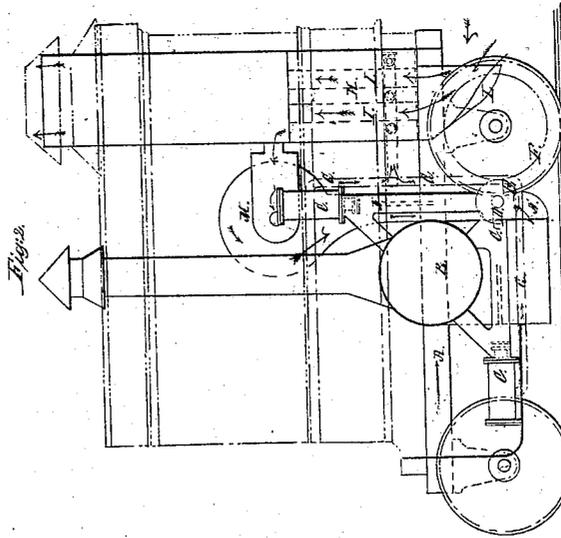
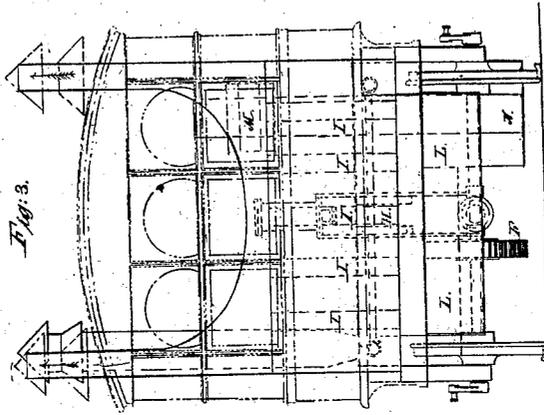
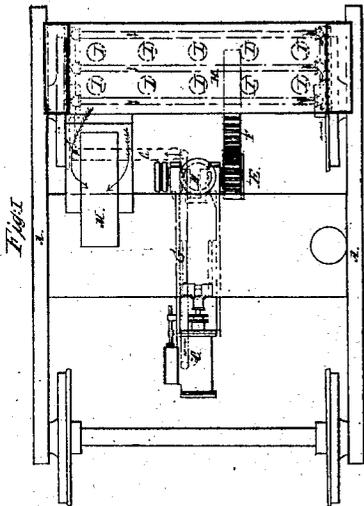


J. V. MERRICK.  
STEAM CARRIAGE.

No. 27,920.

Patented Apr. 17, 1860.



Witnesses:

*Alvin Child*  
*John Jensen*

Inventor:

*J. V. Merrick*

# UNITED STATES PATENT OFFICE.

J. VAUGHAN MERRICK, OF PHILADELPHIA, PENNSYLVANIA.

## STEAM-CARRIAGE.

Specification of Letters Patent No. 27,920, dated April 17, 1860.

*To all whom it may concern:*

Be it known that I, J. VAUGHAN MERRICK, of the city of Philadelphia and State of Pennsylvania, engineer, have invented certain Improvements in Propelling by Steam Carriages to be Used on Common Roads and Railroads; and I do hereby declare the following to be a full and exact description of the same, reference being had to the annexed drawings, in which—

Figure 1 is a plan, Fig. 2 a side elevation, and Fig. 3 a front elevation.

The nature of my invention consists, first, in placing the tubular boiler commonly known as the locomotive boiler, in a transverse position upon the carriage carrying the motive power. Second, in affixing to the shell of the boiler so placed two engines at right angles with each other, one being vertical, or nearly so, and the other horizontal, or nearly so, and beneath the boiler; one pair of cranks serving for both. Third, in conducting the exhaust steam from the engines through a range of pipes immersed in water or other condensing liquid, when such liquid is cooled by a current of air caused to pass through pipes or conduits immersed in it. Fourth, in cooling the condensing liquid by the passage of currents of air made to pass through pipes or conduits traversing it, such currents being induced either by the motion of the carriage on the road, or by artificial means. Fifth, in supplying the fuel required in the generation of steam, with a portion of the air heated by having traversed the condensing liquid.

In the accompanying drawing, A, Figs. 1 and 2, is the truck or carriage mounted on four wheels, as it would be arranged for city rail-roads; B is the boiler, suspended to the carriage at as low a point as practicable without touching the ground; C C are the engines, of which D is the common crank shaft, carrying spur-wheels E, by which it gears into other spur wheels F secured to the forward axle of the car. For the purpose of obtaining the friction required in propulsion, I propose to connect the axles by rods or cranks in the customary manner.

G, G, are the exhaust pipes of the engines, which enter the condensing tank H, traverse it, and are conducted to a receptacle from which the condensed water is forced into the boiler by a pump.

I, I, are several air-pipes or conduits, trav-

ersing the tank H, and exposing a large amount of surface through which the water or other condensing liquid contained in said tank, may give off its heat to the air passing through them. These pipes I prefer to have vertical, so as to increase the force of the current through them by the heat absorbed by the air.

L is a damper, or swinging diaphragm, so arranged as to deflect the air met by the carriage in its movement in either direction, into the air-pipes I, I.

M is a fan rotary blower or screw, drawing its supply of air from above the level of the condensing liquid in the tank H, and forcing it under the furnace by the pipe N. This screw or blower may, however, be placed so as to force the air through the air-pipes in the tank and into the furnace; or it may be placed so as to draw the air through the furnace, but I prefer the described arrangement.

The advantages which will be derived from the foregoing improvements are, dispensing with the noise and escape of steam which have hitherto prevented the use of steam as a motive power in the streets of towns or cities; effecting an economy in the generation of steam from the use of very hot water for feeding the boiler, and of heated air for supplying the combustion of the coal, thereby reducing the amount of fuel required to be carried in order to traverse a given distance, or increasing the distance which may be traveled with the same amount of fuel; and finally, by the simplicity of construction involved in attaching the engines and all their accessories to the boiler, reducing the cost of the machinery.

What I claim as my invention is—

1. The use of a surface condenser immersed in water when the water used for such surface condenser is cooled or partially cooled by the passage of currents of air in the manner set forth.

2. The combination of the boiler and engines with surface condenser and cooling apparatus when arranged, constructed and operating substantially as described for the purpose of propelling carriages by steam substantially as herein set forth.

J. VAUGHAN MERRICK.

Witnesses:

J. G. MINI CHILD,

J. H. B. JENKINS.