

W. Parker, Jr.

Locomotive.

N^o 26,230.

Patented Nov. 22, 1859.

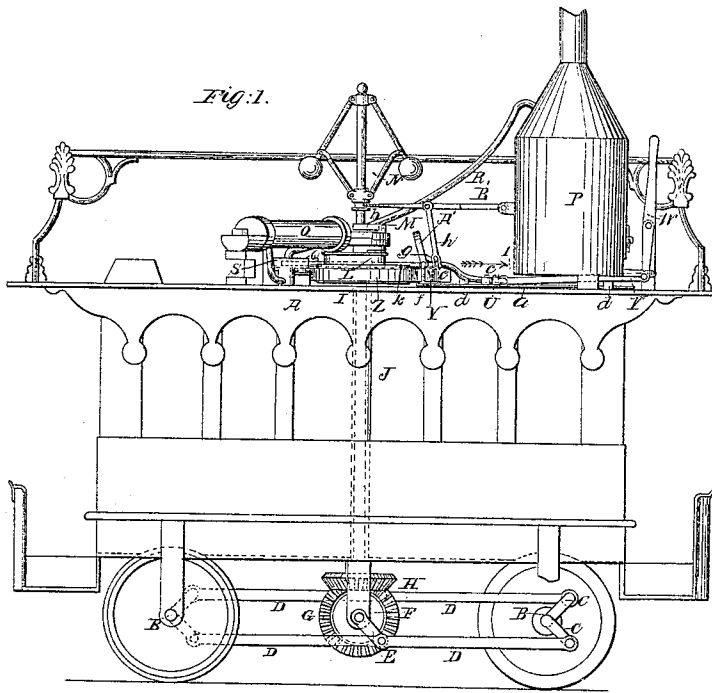
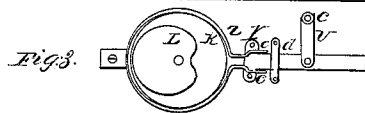
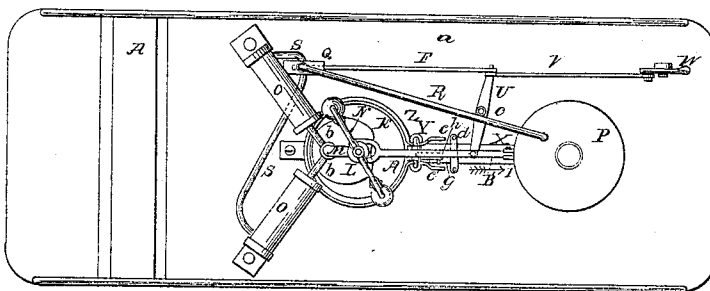


Fig. 2.



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WILLIAM DARKER, JR., OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO HIMSELF AND
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MODE OF APPLYING STEAM AS A MOTOR TO CITY RAILROAD-CARS.

Specification of Letters Patent No. 26,230, dated November 22, 1859.

To all whom it may concern:

Be it known that I, WILLIAM DARKER, JR., of Philadelphia, in the county of Philadelphia and State of Pennsylvania, have
5 invented a new and Improved Mode of Applying Steam as a Motor to City Railroad-Cars; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the annexed drawings, making a part of this specification, in which—

Figure 1, is a side elevation of a city railroad car with my invention applied to it.
Fig. 2, is a plan or top view of the same.
15 Fig. 3, is a detached plan or top view of the brake attachment.

Similar letters of reference indicate corresponding parts in the several figures.

The object of this invention is to apply
20 steam as a motor directly to city rail-road cars in such a manner that the necessary machinery employed will not be cumbersome and entirely out of the way of the passengers, and at the same time so arranged
25 and adapted to the car, as to preclude the possibility of the engineer or attendant running the car beyond a proper speed, and also insuring a perfect control of the speed of the car in descending grades.

30 To enable those skilled in the art to fully understand and construct my invention I will proceed to describe it.

A, represents a rail-road car such as are generally constructed for city use. The
35 axles B, of this car are each provided with two cranks C, placed at right angles to each other, as shown clearly in Fig. 1, and these cranks are connected by rods D, to cranks E, on a shaft F, the cranks E, being also at
40 right angles to each other corresponding to the position of the cranks C, on the axles B. The shaft F, is placed transversely under the car, A, and has a bevel wheel G, placed on it, in to which wheel a corresponding
45 wheels H, gears, the wheel H, being on the lower end of a vertical shaft I, which passes centrally and vertically through the body of the car A, and is encompassed by a tube or hollow port J, which serves as a support to
50 the top of the car as well as a case for the shaft. On the upper end of the shaft I, and just above the top *a*, of the car a wheel K, is placed concentrically and on the upper surface of this wheel a cam L, is placed of
55 heart-shape or other proper form. The

shaft I, just above the cam L, has a crank M, on it and on the shaft above the crank a ball governor N, is placed.

O, O, are two steam cylinders which are placed on the top *a*, of the car and in oblique
60 positions to each other, as shown clearly in Fig. 2. These steam cylinders are provided with the usual pistons, the rods *b*, of which are connected with the crank M, of the
shaft I.
65

On the top of the car the boiler or steam-generator P, is placed. This boiler may be of any of the known forms most suitable for the purpose and steam is conveyed from it into a steam chest Q, by a pipe R, said steam
70 chest containing a throttle-valve and communicating with the two cylinders O, O, by pipes S, S.

The valve in the steam chest Q, has a rod T, attached to it, and the outer end of this
75 rod is connected to a lever U, the fulcrum of which is shown at *c*, and is about at its center. To the same end of the lever U, a rod V, is attached, and the outer end of this rod is connected to a hand lever W.
80

The end of the lever U, opposite to the end where the rods T, V, are attached, is connected to a slide-bar X, which is fitted in proper guides *d*, *d*. The inner end of the
85 slide-bar X, has a loop or yoke Y, attached to it, and within this yoke the ends *e*, *e*, of a metal strap Z, passes.

The strap Z, encompasses the wheel K, and its ends *e*, *e*, are bent as shown in Figs. 2 and 3, so that their outer portions will be
90 farther apart than their inner portions. On the upper part of the yoke Y, a bar A', is placed loosely, the loop passing through an eye *f*, at the lower end of the bar, as shown clearly in Fig. 1. The lower part of the bar
95 A', has a small arm *g*, attached to which the lower end of a rod *h*, is connected, the upper end of said rod being attached to a lever B', the outer end of which is connected to the governor N.
100

The operation is as follows:—The steam generated in P, passes into the steam chest Q, and from thence is admitted into the cylinders O, as usual. The rods *b*, drive or rotate the shaft I, and the latter through the
105 medium of the gearing H, G, rods D, and cranks C, E, rotate the wheels of the car which is consequently propelled along. When the speed of the car is propelled along faster than is permitted by the restrictions of the
110

authorities the governor N, will elevate the lever B', and the rod h, will throw the bar A', over on the wheel K, and within the path of the movement of the cam L, and the latter will move the slide in the direction of arrow 1, and the yoke Y, being of course moved in the same direction, will in consequence of the bent ends e, e, of the strap Z, cause the latter to bind snugly on the wheel K, and form a brake to retard the speed of the car. Just previous to the operation of the brake or the pressing of the strap Z, around the wheel K, the throttle valve in the steam chest Q, is actuated through the medium of the lever U, and rod T, and the steam cut off from the cylinders, thereby stopping the motion of the cars. By this arrangement it will be seen that the speed of the car may be restricted within certain limits and an immoderate speed prevented.

This connecting of the brake and throttle-valve with the governor is an important feature of the invention, for the chief objection urged against the adoption of steam power for city rail-roads has been the liability of immoderate speed and a consequent risk of life and property. By my invention this objection is fully obviated. The governor N, of course may be set or adjusted to admit of the car running at a proper speed, and the speed may be varied if required according to circumstances. Cars running through sparsely settled portions of a city may of course be run with greater speed than those passing through thickly settled portions. The action of the governor on the throttle valve alone would not answer the purpose, as in descending grades there would be no force to oppose the gravity of the car, neither would there be on a level any force to oppose its momentum. The throttle valve may be operated by hand when desired by moving lever W, the yoke Y, being allowed to work over the inner

parts of the ends e, e, a sufficient distance without compressing the strap d.

I do not confine myself to the precise arrangement herein shown for communicating power to the wheels of the car for that may be varied in various ways and the same principle carried out. For instance, two shafts J, may be employed passing down one at each side of the car and the brake wheel and cam may be placed in a vertical position on a horizontal shaft. This may be preferable in some cases. By having the machinery on the top of the car, it is entirely out of the way and free from dust, and its weight will not exceed that of passengers which are seated on the top of what are termed "double decked" cars.

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

1. Placing a steam engine and steam generator on the top of a city rail-road car when the engine by suitable driving mechanism is connected with the wheels of the car to propel the same.

2. Connecting the governor N, with a throttle valve and brake arranged substantially as shown, to operate as set forth.

3. The particular arrangement of the brake formed of the strip Z, on wheel K, and actuated by the movement of the yoke Y, on its bent ends e, e, connected with the hand lever rod V, substantially as shown, so as to allow of the adjustment of the throttle valve by hand independently of the automatic connection.

4. The arrangement of the bar A', cam N, lever B', and rod h, connected with bar A', by the arm g, whereby the brake is operated automatically as set forth.

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