

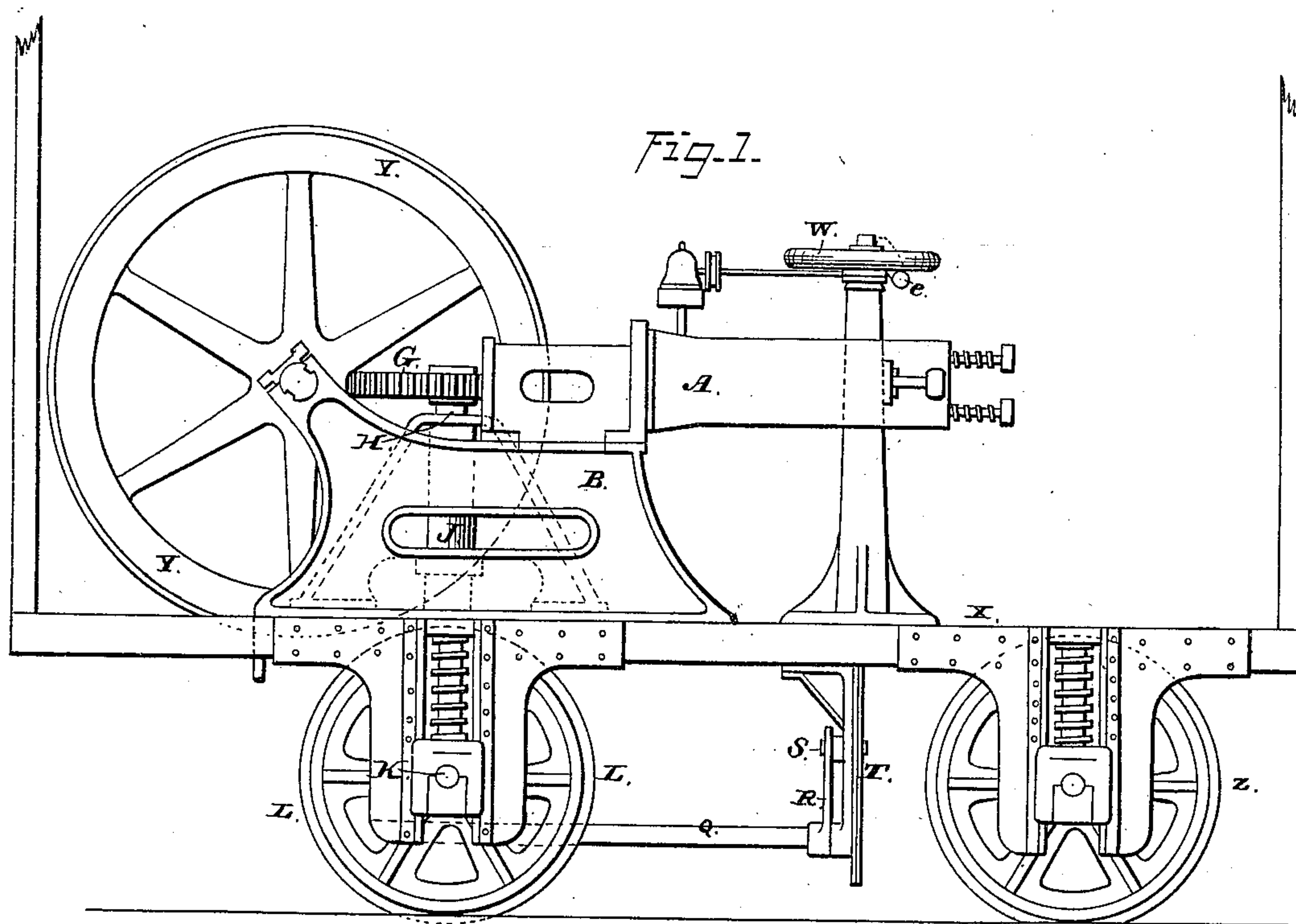
(No Model.)

3 Sheets—Sheet 1.

J. R. PURSSELL.
Apparatus for Moving Tram Cars.

No. 231,097.

Patented Aug. 10, 1880.



WITNESSES=

Geo. E. Hutchinson.
Albert H. Morris.

INVENTOR-

John R. Pursell,
by James L. Norris
Att'y.

(No Model.)

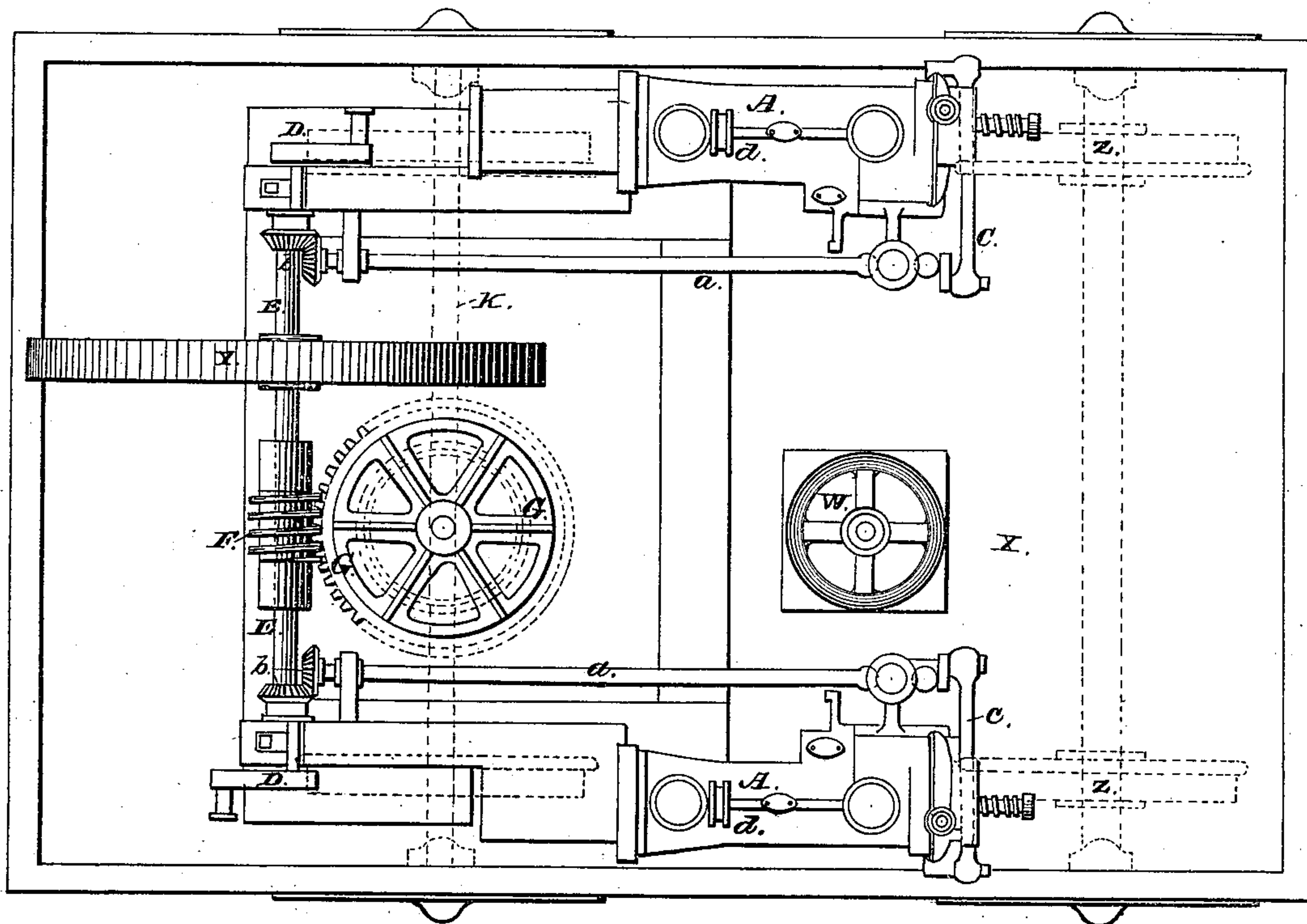
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Fig. 2.



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Jas. E. Hutchinson.
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INVENTOR-

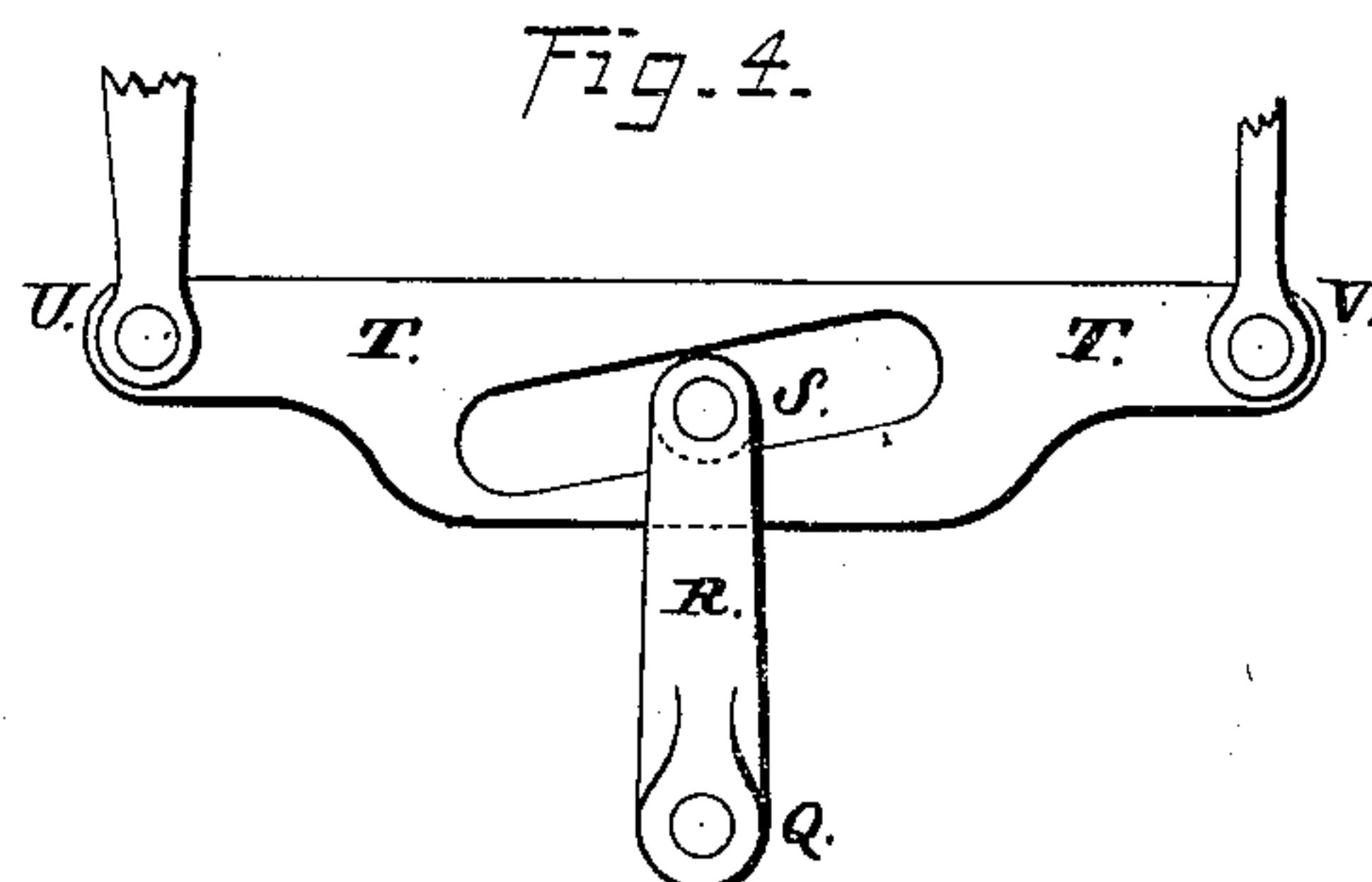
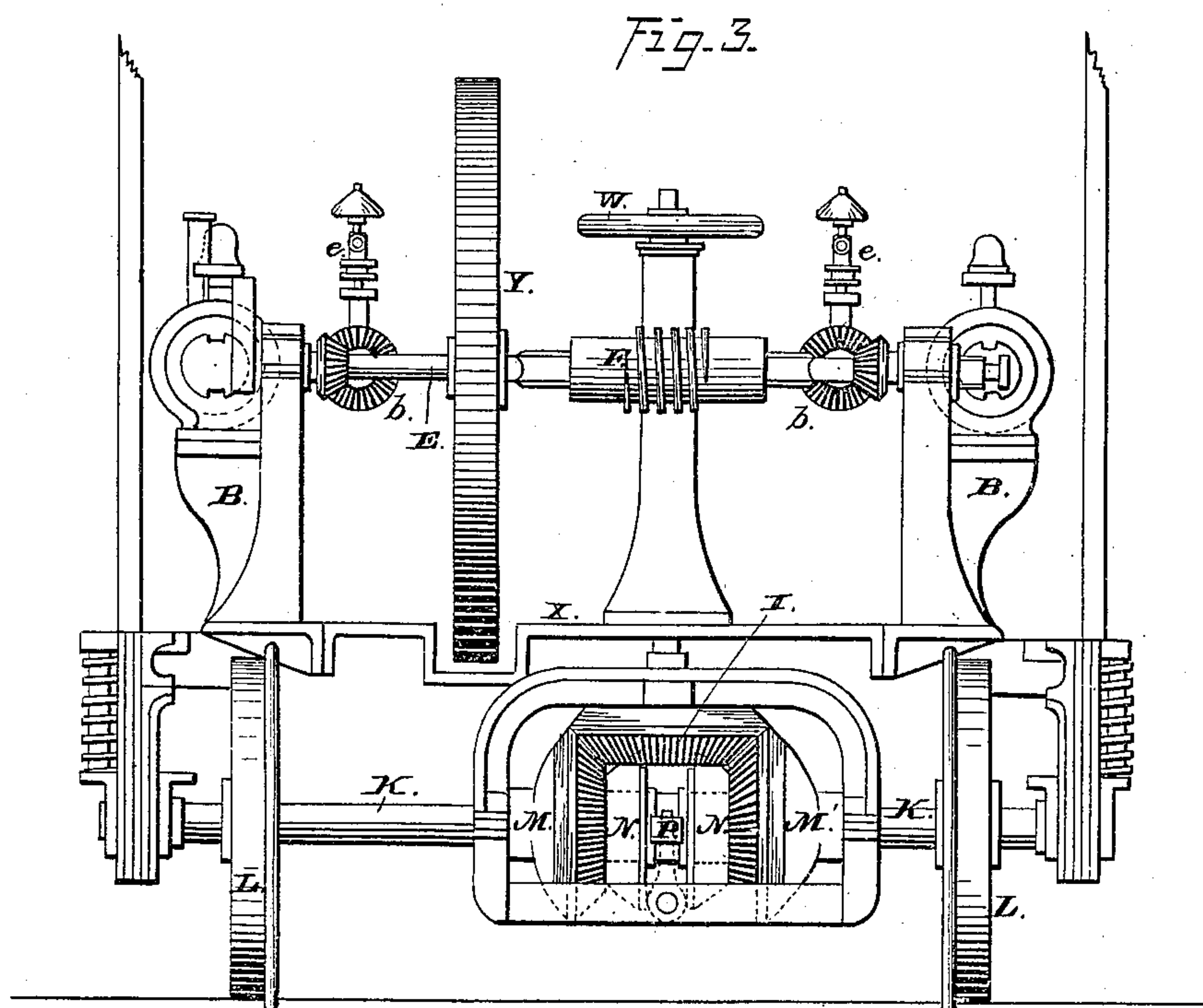
John R. Pursell,

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UNITED STATES PATENT OFFICE.

JOHN R. PURSSELL, OF BLACKFRIARS, LONDON, ENGLAND.

APPARATUS FOR MOVING TRAM-CARS.

SPECIFICATION forming part of Letters Patent No. 231,097, dated August 10, 1880.

Application filed May 24, 1880. (No model.) Patented in England October 29, 1879.

To all whom it may concern:

Be it known that I, JOHN ROGER PURSELL, of Blackfriars, London, England, have invented certain new and useful Improvements in Apparatus for Moving Tram-Cars, of which the following is a specification.

The object of this invention is to provide an efficient apparatus for moving tram-cars; and the manner of carrying out my invention is illustrated in the accompanying drawings, in which—

Figure 1 is a side elevation of an apparatus embodying my invention; Fig. 2, a top or plan view thereof; Fig. 3, an end view, and Fig. 4 a detached view, of the device for actuating the cones to lock and unlock the bevel-wheels on the driving-axle.

In the drawings, A A designate two gas-engines mounted upon the foundations B B. D D indicate the cranks upon the shaft E, which is rotated always in the same direction for communicating motion through the worm F to the worm-wheel G, and from thence, by the shaft H, to the bevel-wheel I.

The shaft H is fitted to rise within the trunk or sleeve J, to allow for the rise and fall of the main axle K, occasioned by the wheels L L in the channels or the joints of the tram-rails over which the vehicle may be traveling.

The bevel-wheel I gears into two other bevel-wheels, M M', mounted loosely upon the axle K, as to be always running while the engines A A are at work, the motion being transmitted from either of them when one of the friction-cones N N is moved along as to bite the conical surface of the wheel M or M', as the case may be.

The two cones N N are feathered upon the axle K, and are moved to and fro by the drop-over link, this being fitted on one end of the rod Q, whose back end carries a lever, R, provided with a pin, S, riding in an inclined slot of the plate T.

The plate T works on a fulcrum at U, as in the enlarged view, Fig. 4, that its opposite end, which is attached to a rod, V, may be raised and lowered by turning the hand-wheel W, under the control of an attendant who stands upon the platform X.

Y is the fly-wheel on the crank-shaft E, to regulate the action of the two engines A A, these being preferably those known as the "silent gas-engines," and supplied with gas, which can be kept in a compressed form with- in strong tanks fitted under or upon the plat-

form X in any convenient manner, the water-tanks being preferably over the rear wheels, Z Z, where dead weight is necessary, as will be well understood.

a a designate shafts, which take their motion by the bevel-pinions b b, for operating the slide-valves c c, and d d are the band-wheels by which the governors e e are actuated.

I purpose connecting the rod Q with the gas-supply tap, that when the lever R is vertical only sufficient gas shall pass from the tanks to keep the engines moving; but as the lever R falls to the right or to the left when the plate T is raised or lowered a full supply of gas shall be permitted to flow to the engines to move the vehicle and the tram-car attached.

What I claim is—

1. In an apparatus for moving tram-cars, the combination of a gas-engine, a transverse horizontal shaft connected at one end with the piston of the engine, a worm arranged on the shaft, a horizontal worm-wheel engaging the worm and rotating continuously in one direction, and a vertical shaft carrying the worm-wheel at its upper end and provided at its lower end with means for rotating the driving-axle of a car in reverse directions, as required, all substantially as described.

2. The combination, with a gas-engine and a transverse shaft having a crank connected therewith and provided with a worm, F, of the worm-wheel G, the vertical shaft H, the continuously-rotating bevel-wheels I, the driving-axle, loose bevel-wheels M M', and mechanism for locking and unlocking the loose bevel-wheels for actuating the driving-axle, substantially as described.

3. The combination, with mechanism, substantially as described, for continuously rotating the worm-wheel G and vertical shaft H, of the bevel-wheels I, driving-axle K, bevel-wheels M M', the friction-cones N N, the rod Q, having a lever, R, provided with a pin, S, and the pivoted plate T, having an inclined slot in which said pin is arranged, said plate being adapted to be elevated or depressed for actuating the cones, substantially as described.

In witness whereof I have hereunto signed my name in the presence of two subscribing witnesses.

Witnesses: JOHN ROGER PURSELL.
H. GARDNER,
R. C. GARDNER.