



# UNITED STATES PATENT OFFICE

THEODORE SCHEFFLER, OF PATERSON, NEW JERSEY.

## IMPROVEMENT IN VALVE-GEARS.

Specification forming part of Letters Patent No. **190,083**, dated April 24, 1877; application filed September 2, 1876.

*To all whom it may concern:*

Be it known that I, THEODORE SCHEFFLER, of Paterson, in the State of New Jersey, have invented a new and useful Improvement in Valve-Gear, of which the following is a specification:

My improvement consists in the arrangement and combination of the valve-gear and link-motion, more fully hereafter described, whereby the two segmental links for the main and cut-off valves of the cylinder are operated by the use of only two eccentrics.

In the accompanying drawings, Figure I represents an outside view of my improved locomotive for street-cars, embodying my invention. Fig. II is an enlarged front view of the link-motion. Fig. III is a top view, and Fig. IV an end view, of the same.

Similar letters represent similar parts in all the figures.

A is the steam-boiler, supported on a suitable frame, B, carried by the axles C C'. The main slide-valve and the expansion-valve are operated through the rock-shafts N N', by the connection of their respective rods with levers L L', attached to the end of said rock-shafts. Corresponding levers M M', placed at the other ends of the rock-shafts, are connected through rods P P' to sliding blocks m m', working in the links R R'.

These two links R R' are suspended from one rod, O, placed between them. Near the upper end of the link R the rod of the eccentric S is attached, and near the lower end of the link R' the rod of the eccentric S' is at-

tached. The pin n, which connects the eccentric-rod S with the link R, passes likewise into a suitable corresponding hub on the link R', and thereby connects the same, and causes the motion of the eccentric-rod S to be communicated likewise to the link R', in connection with the motion received from its eccentric S', as shown on an enlarged scale in Fig. VIII. In the same manner the pin n', which connects the rod of the eccentric S' with the link R', passes likewise into a suitable corresponding hub on the link R, thereby connecting the same together in the same manner at the lower part, and for a similar purpose.

By this arrangement and combination of the several parts we obtain two separate links, one for the main slide-valve and one for the expansion-valve, in which their respective sliding-blocks m m' can be operated independent of each other, while only two eccentrics are used to operate both links.

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

Two links, R R', each being operated by an eccentric-rod, and connecting the two links together through a projection of their respective pins n n', by which the eccentric-rods are attached to said links, and arranged to operate the main valve and the expansion-valve, substantially in the manner and for the purpose described.

THEODORE SCHEFFLER.

Witnesses:

HENRY E. ROEDER,  
WILLIAM EHRET.