

# United States Patent Office.

JAMES MILLAR URE, OF GLASGOW, GREAT BRITAIN.

Letters Patent No. 107,983, dated October 4, 1870; patented in England, March 18, 1868.

## IMPROVEMENT IN LOCOMOTIVES.

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

I, JAMES MILLAR URE, of Glasgow, in the county of Lanark, Kingdom of Great Britain and Ireland, have invented an Improvement in Locomotive Engines, of which the following is a specification.

### *Nature and Object of the Invention.*

My invention has for its object the lifting of the driving-wheels of a locomotive when it is descending an incline, or at any other time when that operation is desirable. When the locomotive is descending an incline with the driving-wheels lifted in the manner proposed, the pistons, piston-rods, valves, valve-spin-dles, eccentrics, eccentric-rods, motion-links, connecting-rods, and slide-blocks, will be at rest, and there will be no roughness of motion in any of the parts.

A great saving will thus be effected in wear, in tear, and in lubricating materials, particularly on a railroad with long inclines. Also, in locomotives without feed-injectors, water may be pumped into the boiler when the locomotive is stationary; the driving-wheels being lifted so that they may be set in motion and the pumps worked without propelling the locomotive; and when the locomotive is in the running shed or repairing-shop, the packing and repairing may be done without moving the locomotive to and fro, provided the driver has lifted the driving-wheels before letting down the steam.

My invention consists in arranging a steam-cylinder and piston connected by levers to the axle-boxes of the driving-wheels in such a way that steam may be admitted to cause the lifting of the wheels when required.

I also combine with the said levers other levers, which press down upon the axle-boxes of the leading and trailing-wheels and prevent excessive strain from acting on the springs of those wheels.

### *Description of the Accompanying Drawing.*

The drawing is a longitudinal sectional elevation of a locomotive with two pairs of driving-wheels, as fitted with my improvement.

### *General Description.*

A steam-cylinder, 1, is fixed on the foot-plate 2, (or it might be in any other convenient position,) and is fitted with a pipe, 3, and four-way cock 4, for supplying it with steam from the boiler.

A piston-rod, 5, passing down through the lower end of the cylinder 1 is jointed to the back end of a lever, 6, fixed on a rocking-shaft at 7, which has fixed

on it at each side of the locomotive a lever, 8, extending forward and connected at its front end by a link, 9, to two short levers, 10, 11.

These levers 10 11 are fixed on transverse rocking shafts, and are directed forward and backward, so that the other end of one is directly over the forward driving-axle 12, and that of the other over the rear driving-axle 13.

The levers 10 11 are jointed to triangular plates 14 15, and joint-pins are passed through vertically elongated holes in flanges on the tops of the axle-boxes 16 17; these elongated holes allowing of the play of the springs 18, 19, when running in the ordinary way, while the pins can lift the axle-boxes when required.

The triangular plates 14 15 are fixed to pairs of vertical bars, 20 20 21 21, having their bottom ends united by semicircular portions 22 23, and having the spring 18 19 jointed to their upper ends, while the spring-pins 24 25 pass down to the tops of the axle-boxes in the ordinary way.

With this arrangement, on steam being admitted to the cylinder 1, so as to raise the piston, it will, through the action of the connections just described, cause the axle-boxes 16 17 to be lifted, and with them the driving-wheels 26 27.

The bottoms of the bars 20 22 and 21 23 are jointed to levers 28 29, centered on studs 30 31, and having their outer ends over the axle-boxes 32 33 of the leading and trailing-wheels, and when the driving-wheels are lifted, as hereinbefore described, the levers 28 29 bear down upon the leading and trailing-wheels and prevent excessive strain from acting on the springs of those wheels.

### *Claims.*

I claim as my invention—

1. A locomotive, provided with a steam-cylinder and lever-connection so arranged as to lift the driving-wheels when required, substantially as hereinbefore described.

2. The combination of levers with the lifting appliances and the leading and trailing-wheels, substantially in the manner and for the purpose hereinbefore described.

J. M. URE.

Witnesses:

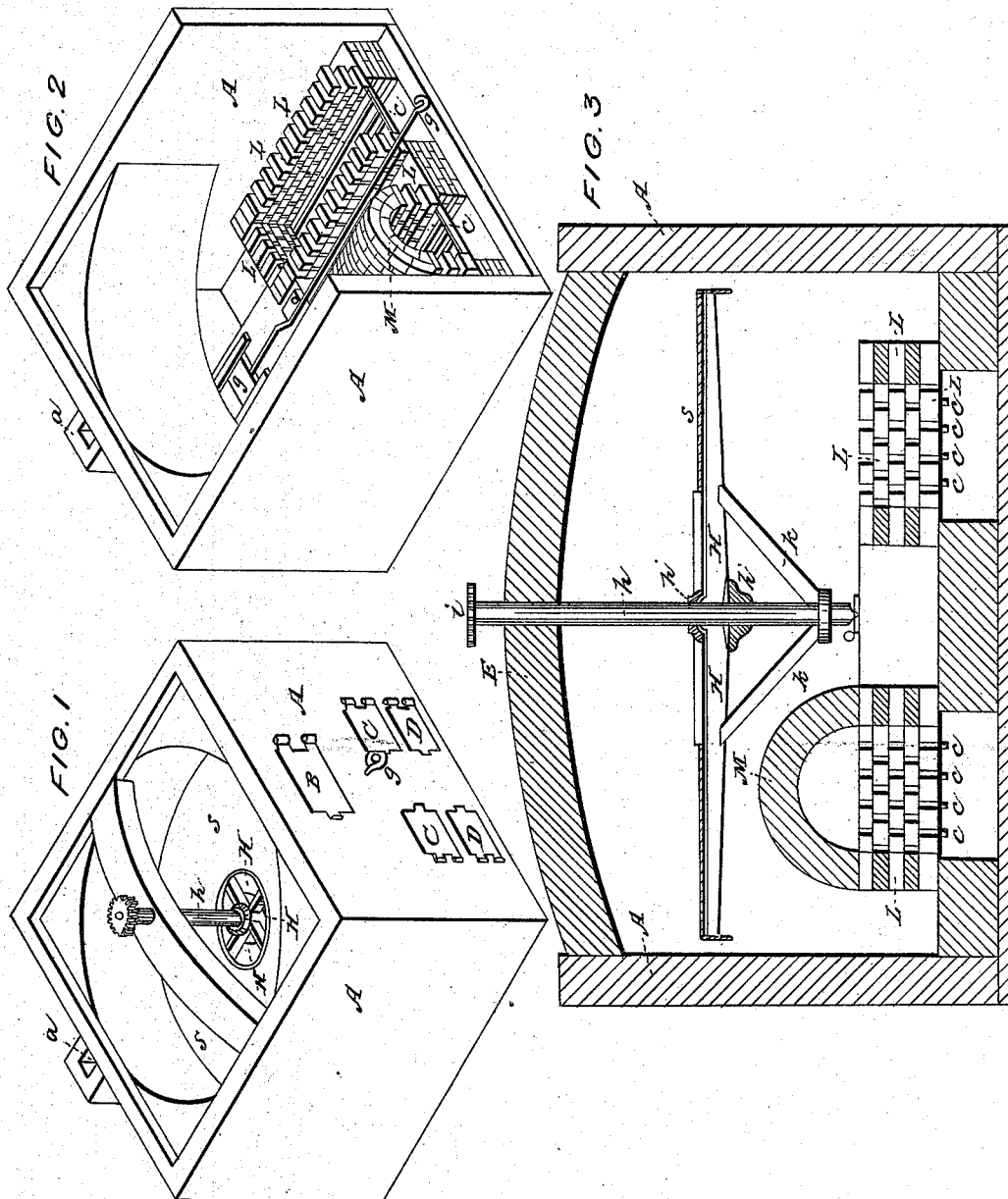
EDMUND HUNT, Glasgow.

ALEXR. TEMPLETON, Glasgow.

J. VALE.  
Baker's Oven.

No. 107,984.

Patented Oct. 4, 1870.



WITNESSES:

*S. W. H. H. H. H.*  
*S. W. H. H. H. H.*

INVENTOR:

*Joseph Vale*