

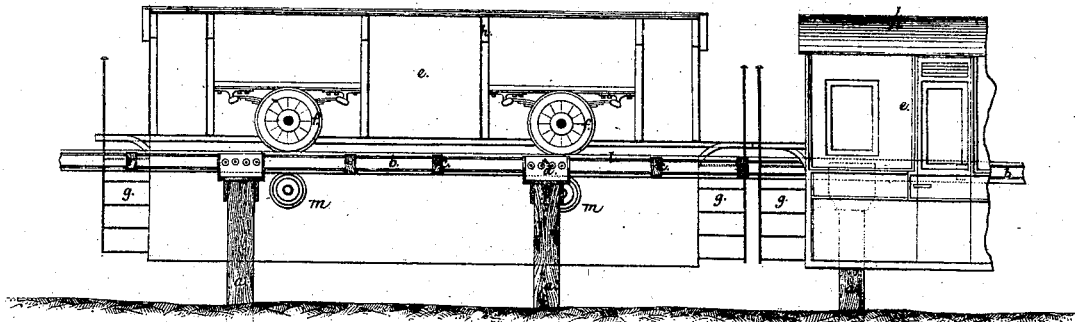
H. T. HUMPHREYS.

Improvement in Railways.

No. 116,059.

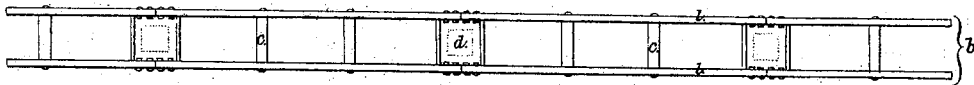
Patented June 20, 1871.

FIG. 1.



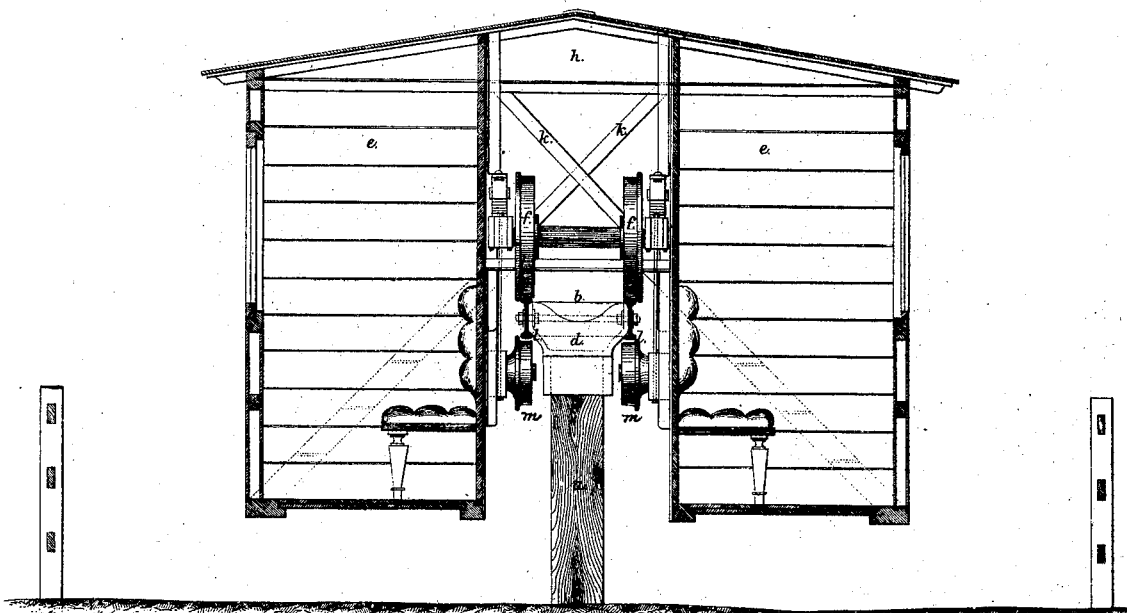
SECTIONAL AND SIDE ELEVATION. (Scale  $\frac{1}{4}$ ' to the foot.)

FIG. 2.



PLAN. (Scale  $\frac{1}{4}$ ' to the foot.)

FIG. 3.



CROSS SECTION AND END VIEW. (Scale  $\frac{1}{2}$ ' to the foot.)

Witnesses,  
H. A. Daniels  
Clerk

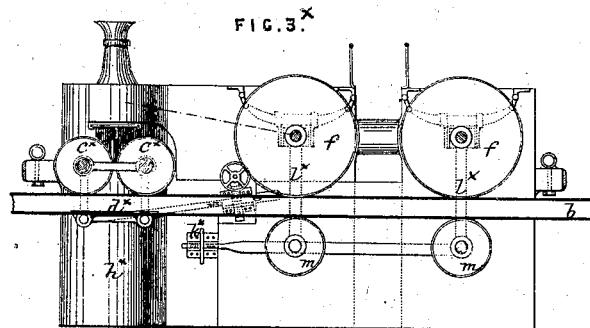
H. Temple Humphreys, Inventor  
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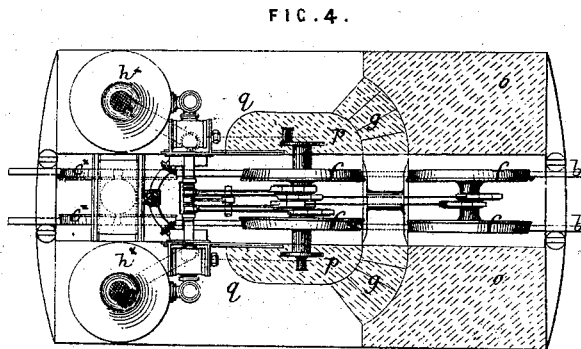
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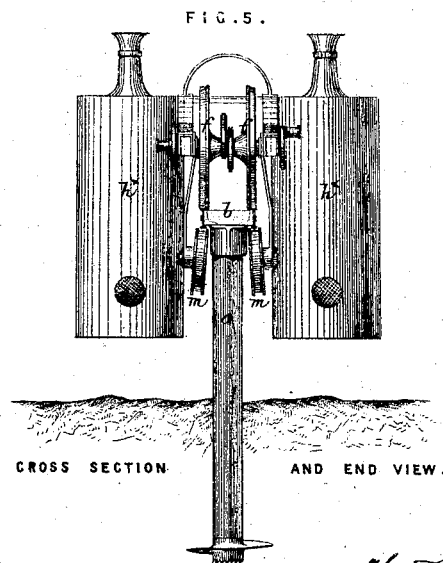
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SECTIONAL ELEVATION



PLAN.



CROSS SECTION AND END VIEW.

(Scale  $\frac{1}{4}$  to the foot.)

Witnesses,  
H. A. Daniels  
Attorney

H. Temple Humphreys Inventor  
by C. S. Whitman & Co. Attorneys

# UNITED STATES PATENT OFFICE.

HENRY TEMPLE HUMPHREYS, OF WEST LIMERICK, IRELAND.

## IMPROVEMENT IN RAILWAYS.

Specification forming part of Letters Patent No. 116,059, dated June 20, 1871.

*To all whom it may concern:*

Be it known that I, HENRY TEMPLE HUMPHREYS, of West Limerick, Ireland, in the United Kingdom of Great Britain, civil engineer, have invented a certain Improved Railway and Rolling-Stock to be used therewith, of which the following is a specification:

My invention relates to the economically constructing and working of railways and rolling-stock, and as regards railways consists in so supporting rails or ways that they may form suitable ways for receiving, for the purposes of moving thereunder as well as thereon, the wheels of the improved rolling-stock next to be described; and as regards rolling-stock consists in constructing it to be used with the improved railway above described.

The accompanying drawing will illustrate the mode of performing the said improvements, in which Figure 1, Sheet 1, shows a longitudinal elevation of the railway, and longitudinal section and side elevation of a carriage on same. In this case, *a*, Figs. 1 and 2, are wooden piles driven at convenient intervals along the line of route; *b*, Figs. 1, 2, and 3, represent the way or road, which is made girder-fashion, and formed with two double-headed rails, *l*, Figs. 1, 2, and 3, one on each side, supported by a metal cap or shoe, *d*, Figs. 1, 2, and 3, fashioned to receive said rails; also the bolts for securing them and the top or head of the pile *a*, to which said cap or shoe may be secured in any convenient manner; *c*, Figs. 1 and 2, are ties. Fig. 2 shows a plan of the railway; Fig. 3, a cross-section of the carriage and railway on a larger scale.

For crossing large valleys or towns, or under other circumstances, the supports may be furnished with ties, braces, and, when desired, with side or under rails to receive the guide-wheels or under gripping-wheels *m*, Figs. 1 and 3.

*e*, Figs. 1 and 3, shows the longitudinal side compartments of the rolling-stock mentioned above, and *h*, Figs. 1 and 3, the longitudinal roof or top compartment. *k*, Fig. 3, are ties furnished at intervals to strengthen the side walls of the compartments *e*. *f*, Figs. 1 and 3,

are the upper carrying-wheels. They may be placed nearer the roof or nearer the base, if desired. *m*, Figs. 1 and 3, are the under gripping-wheels. *g*, Fig. 1, are steps for passage to and from either side of the carriage. Figs. 3<sup>x</sup>, 4, and 5, Sheet 2, show sectional elevation, plan, and cross-section, and end view, respectively, of the arrangement of a locomotive, as described above, in which *b* is the road; *a*, Fig. 5, one of the piles or supports thereof; *f*, the upper driving-wheels; *m*, lower gripping-wheels; *c*<sup>x</sup>, Figs. 3<sup>x</sup> and 4, bogie-wheels; *d*<sup>x</sup>, Fig. 3<sup>x</sup>, skid or brake; *g*, Fig. 4, steps for passage from one side to the other; *h*<sup>x</sup>, Figs. 3<sup>x</sup>, 4, and 5, vertical boilers. The lower gripping-wheels *m* are shown barely touching the rails, (their natural position.) When required to gripe they are pulled forward by the screw apparatus of the adjusting-rod *k*<sup>x</sup>, Fig. 3<sup>x</sup>, and caused, by the shifting from the vertical of the suspensory-rods *l*<sup>x</sup>, to gripe to any extent required the under surface of the double-headed rails, as shown. By a similar arrangement the skid or brake *d*<sup>x</sup> is brought into play. The spaces *o*, Fig. 4, are for tanks to hold water; *p*, for bunkers for coals; *q*, platform.

I do not claim, broadly, the rolling-stock of railroads constructed girder-fashion, with channeled way for the reception of the wheels; but

What I do claim, and desire to secure by Letters Patent, is—

1. The combination of the metal cap *d*, the double-headed rails *b*, under-gripping or guide-wheels *m*, and carrying-wheels *f*, when constructed and operating together as described.

2. The combination of the double-headed rails *b*, gripping-wheels *m*, adjusting-rod *k*<sup>x</sup>, suspension-rods *l*<sup>x</sup>, and support-wheels *f*, when constructed and operating together as and for the purpose described.

H. TEMPLE HUMPHREYS.

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