J. Rangelby

Constructing Railroad

No. 1,916. Patented Dec. 28. 1840.

Fig. 2.

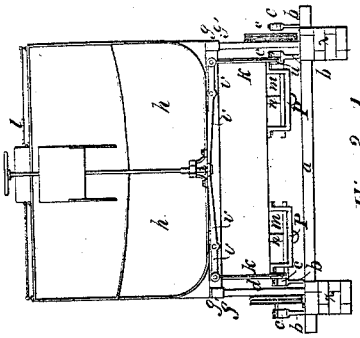


Fig 2. A

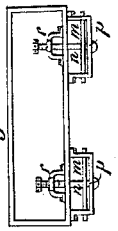


Fig 4.

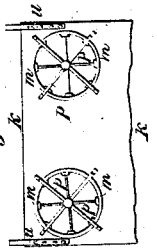


Fig 1.

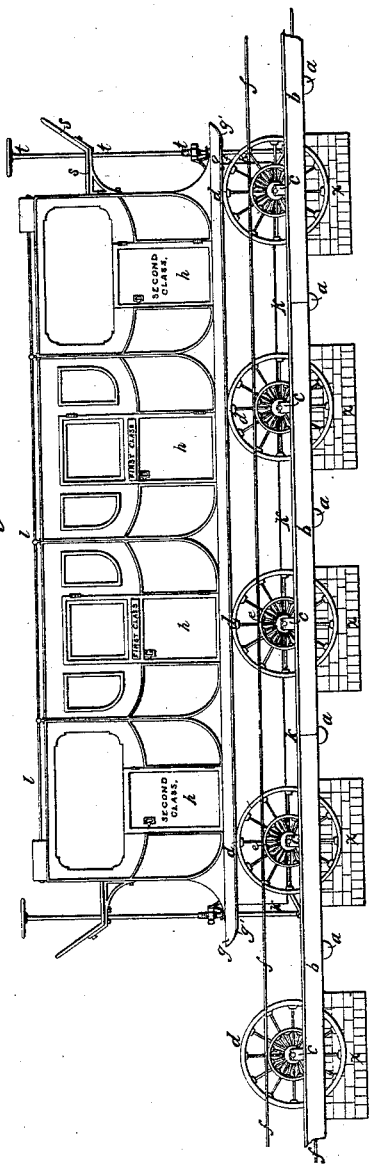
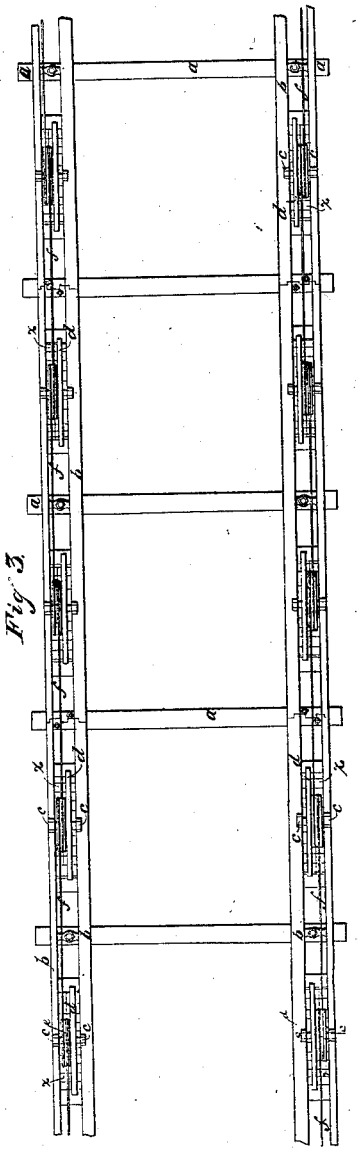


Fig 3.



UNITED STATES PATENT OFFICE.

JOHN RANGELEY, OF CAMBERWELL, ENGLAND.

CONSTRUCTION OF RAILWAYS AND IN THE MEANS OF APPLYING POWER TO PROPEL CARRIAGES THEREON.

Specification of Letters Patent No. 1,916, dated December 28, 1840.

To all whom it may concern:

Be it known that I, JOHN RANGELEY, a subject of Her Britannic Majesty, residing at Camberwell, in the county of Surrey, in the Kingdom of England, have invented certain new and useful Improvements in the Construction of Railways and in the Means of Applying Power to Propelling Carriages Thereon, of which the following is a full and exact description, namely:

My invention relates to a mode of constructing railways in such a manner that the power employed for propelling carriages thereon is caused to be transmitted by a series or train of wheels moving on axles supported on stationary bearings fixed in the line of railway, and in such manner that the carriages for passengers and goods are caused to pass over, and be acted on and moved by the rotatory motion of such wheels by the contact and friction of their peripheries acting against the undersides of a pair of running rails, attached to each carriage, the wheels being driven by endless bands, leading from the moving power. And the manner in which I carry these my improvements into effect is exemplified by the drawings hereunto annexed as explained in the description thereof herein following, reference being had to the figures and letters marked on the drawings in correspondence with those contained in the description.

Description of the drawings.—Figure 1 represents a side view of a train of pulleys, bands, and wheels, with their supports and bearings, together with a carriage having two running rails, each rail lying along upon four wheels of the train, only one of the rails is seen in this figure. Fig. 2, an end view of the same. Fig. 3, plan of the train of wheels, pulleys, bands, bearings and supports in two parallel rows. Fig. 4, a view of the underside of one end of a luggage box attached to the carriage, showing a pair of guide wheels and their supporting frames and also the underside of a brake attached to the underside of the luggage box.

It is to be noted that the same letters of reference indicate the same parts in all the four figures.

a represents sleepers of wood to be embedded in gravel, the sleepers being capable of adjustment by the ramming in of gravel under them, or by the taking away of gravel from under them, as in the case of the sleepers of ordinary railways. *b* two lines of iron rails cast in twelve feet lengths, and bolted down in double pairs upon the sleepers to support the bearings of the wheels. *c* the bearings or plummer blocks in which the axles of the wheels and pulleys turn. *d* the wheels, each fixed upon an axle revolving in two bearings. *e* a pulley fixed on the axle of each wheel, having two grooves around the periphery, one groove for the band which is driven by the preceding pulley of the train, and another groove for the band which drives the succeeding pulley of the train. *f* the bands held together at the ends by hooks and eyes or otherwise, constituting them endless bands, each band passing around two pulleys. *g* the running rails of the carriage, resting on the peripheries of the wheels. *g'* iron tire screwed to the underside of the running rails. *h* a carriage built upon the running rails representing two close coaches for first-class passengers, and two open carriages for second-class passengers, with a compartment or box at the bottom for luggage and goods. *k* the luggage box. *l* rails to prevent light luggage from slipping off from the roof of the carriage. *m*, two horizontal guide wheels revolving under the luggage box, to roll against the inner sides of the rails *b* and keep the carriage from moving sidewise upon the train of wheels, there are four of such guide wheels to each carriage, placed near the ends. *n* two spindles fixed in horizontal wheels, the wheels and the spindles revolving together. *p* two frames bolted under the bottom of the luggage box, the frames carrying steps or cups in which the lower ends of the spindles *n* work. *q* two frames bolted on the bottom of the luggage box, to receive and support screws which pass into cups formed in the tops of the spindles. *r* two screws the lower points constituting the upper pivots of the spindles, and working in cups formed in the tops of the spindles in order that the upper pivots may not require oiling oftener than the lower pivots which work in the steps. *s* a seat for the conductor. *s'* the foot-board. *t* a handle shaft, and screw, for working a brake to check the speed and stop the carriage. *u* the brake in two parts, fixed to the underside of the luggage box, and made to press upon the two inner rails, by turning the screw *t* communicating its power

through the levers *v* and connecting rods *w*. *x* walls increasing the lower parts of the wheels to prevent the gravel falling down and obstructing the motion of the wheels.

I have not thought it necessary to show by drawings the steam engine connected with the first pair of wheels in the system, because every engineer knows well how to effect the purpose of driving a pair of bands by two riggers fixed on and turning with a horizontal shaft receiving its motion immediately from a fixed steam engine. I would, however, remark that I prefer where local and other circumstances will allow of such an arrangement, to have a steam engine at each mile of the distance or length of railway, and I would remark that the driving shaft is to be placed so low that the upper part of the riggers shall not be quite so high as the upper part of the train of wheels because the carriage must pass without touching the riggers. And I have mentioned only bands held together with hooks and eyes, for turning my trains of wheels by which round bands are implied, but it is evident that straps running on drums may be substituted and fastened together by any convenient means. And in rising steep acclivities with a comparatively slow motion, chains may be used passing over pulleys, having studs in their peripheries, to catch in the links of the chains. And I would further remark, that I have for the sake of clearness of description, mentioned the casting of the rails in pairs of twelve feet length, which it is obvious may be cast of different lengths and dimensions together or separate, according to convenience, the train wheels and pulleys too, may be larger or smaller, wider apart or nearer together, or may revolve on fixed axles according to circumstances, and the carriages may be varied in size, form and ornament as fancy may dictate. And I have not shown any springs between the running rails and the carriage, because when care is taken to place the peripheries of the wheels in a straight line the carriage will run smoothly without springs. And I have not shown any steps to the carriage, because I contemplate erecting a platform at all the stations nearly on a level with the floor of the carriage from which the passengers can step at once into the carriages. And I have not shown any buffers, because they may be applied in any common manner.

The nature of my invention and the best manner I am acquainted with of performing the same having been thus described, I declare that I lay no claim to the various parts separately, nor do I confine myself to any precise arrangement of the details, so long as the peculiarity of my invention be retained; and although I have spoken of the steam engine which I consider will be the best motive power, in most cases, I do not confine myself thereto, as other power may be employed; but—

What I claim is—

The mode herein described of constructing railways, whereby the power employed to propel carriages thereon is transmitted by a series or train of wheels revolving on axles supported on stationary bearings fixed in the line of railway, and in such manner that the carriages for passengers and goods are caused to pass over and be acted on, and moved by the rotary motion of such wheels, by the contact and friction of their peripheries acting against the undersides of the pair of running rails attached to each carriage, the wheels being driven by endless bands leading from the moving power.

Witness, my hand this twenty sixth day of October 1840.

JOHN RANGELEY.

In presence of—
JOHN ISAAC HAWKINS,
J. R. BAKEWELL.