

D. FRAZER.
Locomotives.

No. 147,927.

Patented Feb. 24, 1874.

Fig. 1.

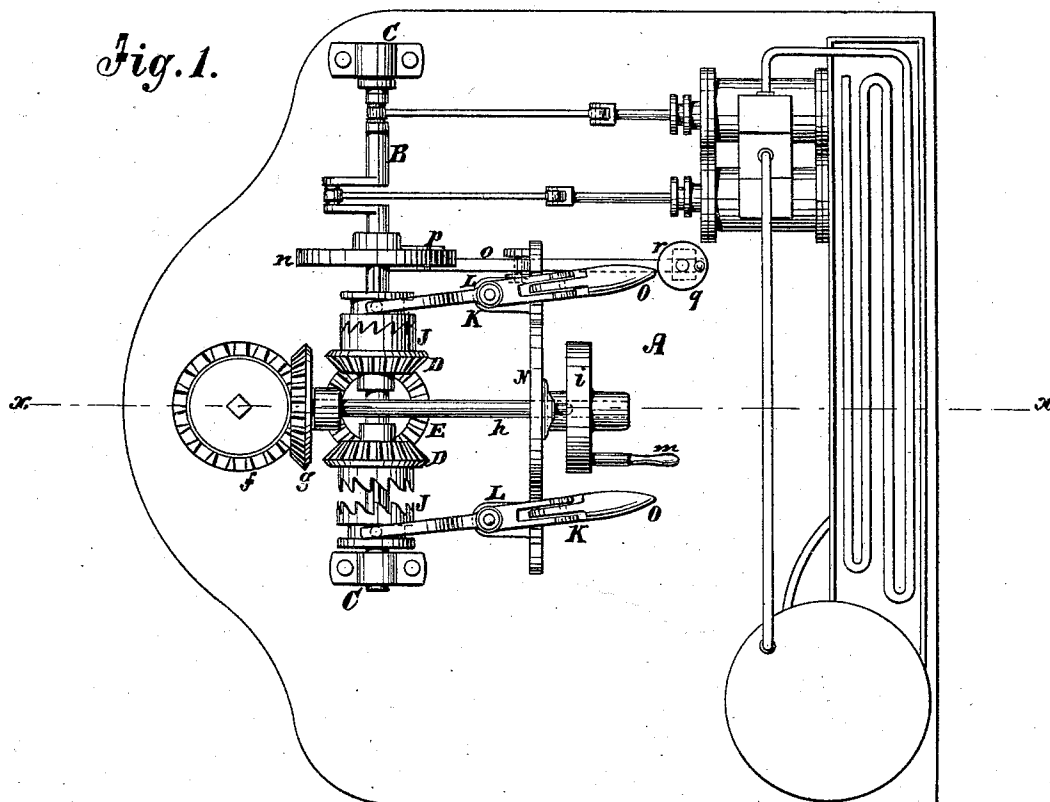
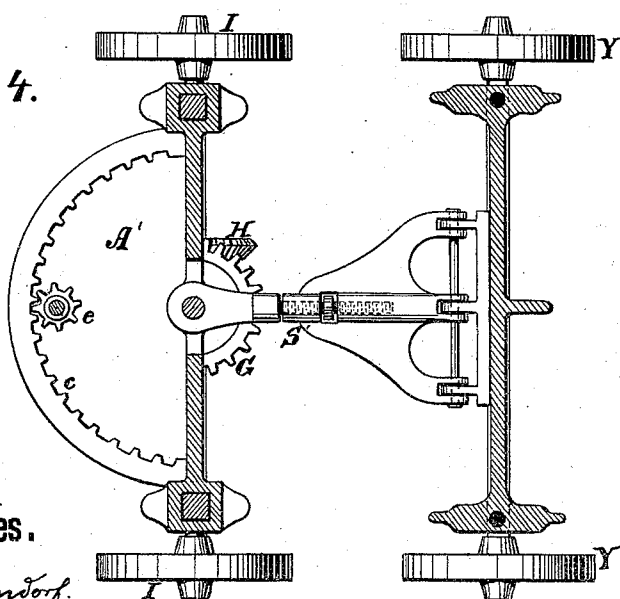


Fig. 4.



Witnesses.

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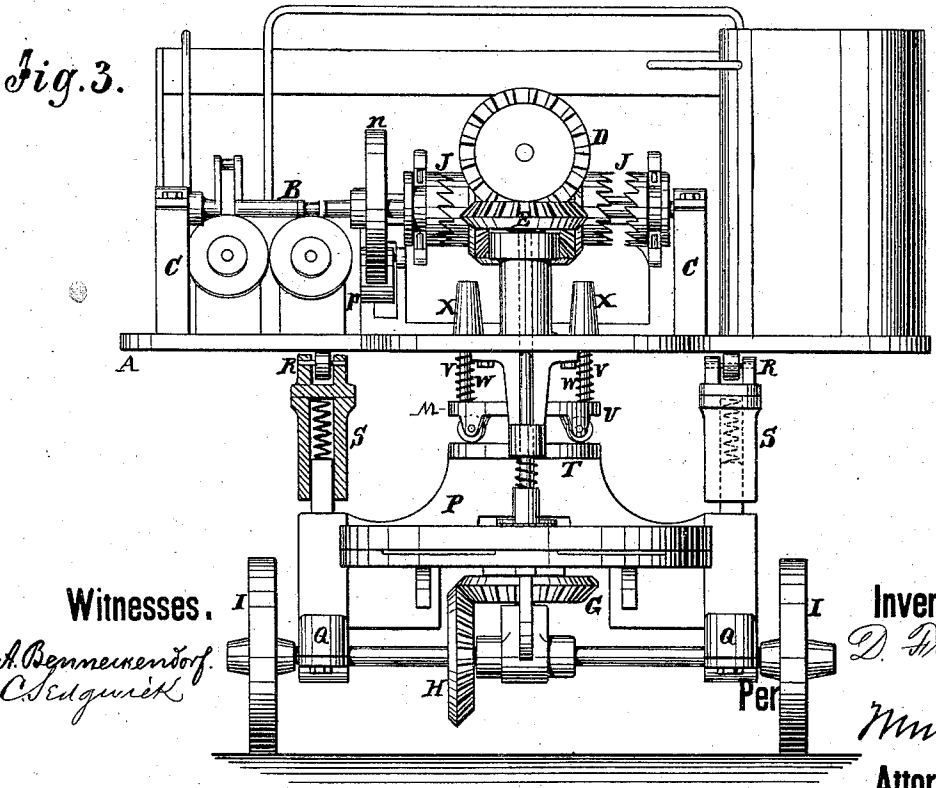
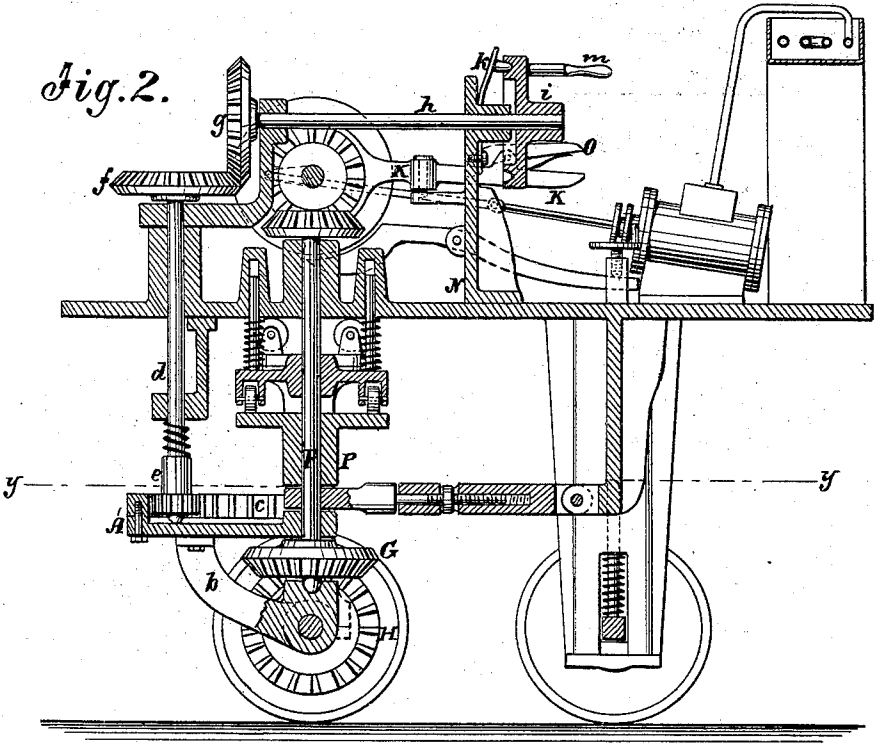
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UNITED STATES PATENT OFFICE.

DAVID FRAZER, OF NEWBURG, NEW YORK.

IMPROVEMENT IN LOCOMOTIVES.

Specification forming part of Letters Patent No. 147,927, dated February 24, 1874; application filed April 5, 1873.

To all whom it may concern:

Be it known that I, DAVID FRAZER, of Newburg, in the county of Orange and State of New York, have invented a new and useful Improvement in Locomotives, of which the following is a specification:

This invention relates to the construction and management of locomotives for railroads or common roads; and consists in the mode of propelling, starting, turning, and stopping, hereinafter described.

In the accompanying drawings, Figure 1, Sheet 1, represents a plan view. Fig. 2, Sheet 2, is a vertical section of Fig. 1 taken on the line *ff*. Fig. 3, Sheet 2, is a horizontal section of Fig. 2 on the line *yy*. Fig. 4 is a front view, partly in section.

Similar letters of reference indicate corresponding parts.

In this example of my invention, I show a steam-boiler with compound engines as a motive power; but I do not confine myself to any form of engine, or kind of motive power, the apparatus and attachments hereinafter described being designed to facilitate the movements of locomotives in running on the track, turning corners, and starting and stopping.

A is the platform. B is the driving-shaft, provided with one or more cranks, and connected with the motive power, substantially as represented in Fig. 1. The driving-shaft is supported in boxes on the stand or pillow-blocks C C. D D are bevel-wheels on this shaft, which mesh into the bevel-wheel E, which is on the top of the vertical shaft F. On the lower end of this shaft F is a bevel-wheel, G, which meshes into the bevel-wheel H. This wheel H is on the forward axle of the locomotive, and by this means the forward or driving wheels I I are revolved. The bevel-wheels first mentioned, D D, are loose on the driving-shaft, and are made to "work" and impart power to the vertical shaft or nut, as may be desired, by means of clutch-couplings J J, which work on feathers on the shaft, and are operated by means of the shifting-levers K K. The fulcrums of these shifting-levers are at the points L L. The levers are held in position by means of curved sub-levers O O, the ends of which engage with notches in the recesses of the plate, and hold the shifting-le-

vers and clutches in position when engaged with or released from the bevel-wheels. P is a pillow-block plate, to the lower edge of which the axle-boxes Q Q are attached. This plate extends up and supports the platform A on rollers R, which revolve in spring-socket stands S S, as seen in Fig. 3. On the center of this plate is the floor of the turn-table U, from the top of which turn-table extend rods V, on which are spiral springs W. The rods V enter the socket-pieces X on top of the platform.

It will be seen that the platform is supported on springs, so that sudden jolts or concussions are prevented. This arrangement allows the forward axle to turn to the right or left going around curves, or changing the direction.

Mere motions of the truck are controlled by the engineer by means of a mechanism which I will now describe.

A' is a horizontal semicircular plate, which projects from and in front of the pillow-block plate P. This plate is supported by the bracket b from the forward axle. c is a semicircular segment on the plate A'. d is a vertical shaft, bearing upon its lower end a pinion, e, which engages with the segment. The shaft passes up through the platform, and has a bevel-wheel, f, upon its upper end. g is a bevel-wheel, which engages with f on the horizontal shaft h. The rear end of the shaft h is supported by the vertical plate N, and has a crank-wheel, i, upon it, with recesses in its side, with which the spring-catch K engages, to hold the wheel in any desired position. m is the crank or handle of the wheel.

By turning the wheel it will be seen that the truck will be turned, so that the locomotive will be enabled to round a curve in the road without swinging the axle, or having either of the driving-wheels slip on the track. This is an important point and essential feature of my invention, as, by this means, the driving-axle can always be kept at right angles with the rails of the track, and the torsion to which car-axles, arranged in the ordinary manner is subjected, is avoided.

I do not confine myself in this feature of my invention to locomotives; but design to apply it to rail-car trucks generally.

n is a brake-wheel on the driving-shaft B. o is a brake-lever, having upon its end a shoe, p,

which is made to engage with the under side of the wheel by means of a screw, which works through the stand *q*. *r* is a crank-wheel above the stand and on the end of the screw, by means of which the brake is applied.

The driving-shaft is always turned in one direction; but the driving axle and wheels are governed by the position of the clutch-couplings. For the forward motion, the left-hand (left hand of the engineer) coupling is engaged, and the other or right-hand clutch is disconnected. For backing, the right-hand clutch is engaged, and the left-hand disengaged. When both clutches are engaged, the wheels cannot turn at all, and consequently the locomotive stops as soon as its momentum is lost. These motions are produced by the engineer at will, who stands within reach of the shifting-levers and crank-wheel, to guide and manage the locomotive.

The forward truck is connected with the rear one by means of the jointed reach *S'*. The rear wheels *Y Y* are loose on the axle, and the boxes of the axles slide in slots, with springs

above them, as seen in Fig. 2. The reach *S'* forms a universal joint, which allows the forward wheels to rise or fall, or turn in any way, without cramping. When both clutches are disconnected, the driving-shaft is free, and may be used for any other purpose, as driving pumps, saws, or other machinery.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. The combination of the driving-shaft *B*, couplings *J J*, bevel-wheels *D D*, vertical shaft *F*, wheels *E* and *G* thereon, and wheel *H* on the axle, with the truck of a locomotive, substantially as and for the purposes described.

2. The rollers *R* and turn-table *U*, in combination with the truck of a locomotive, as and for the purposes described.

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Witnesses:

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