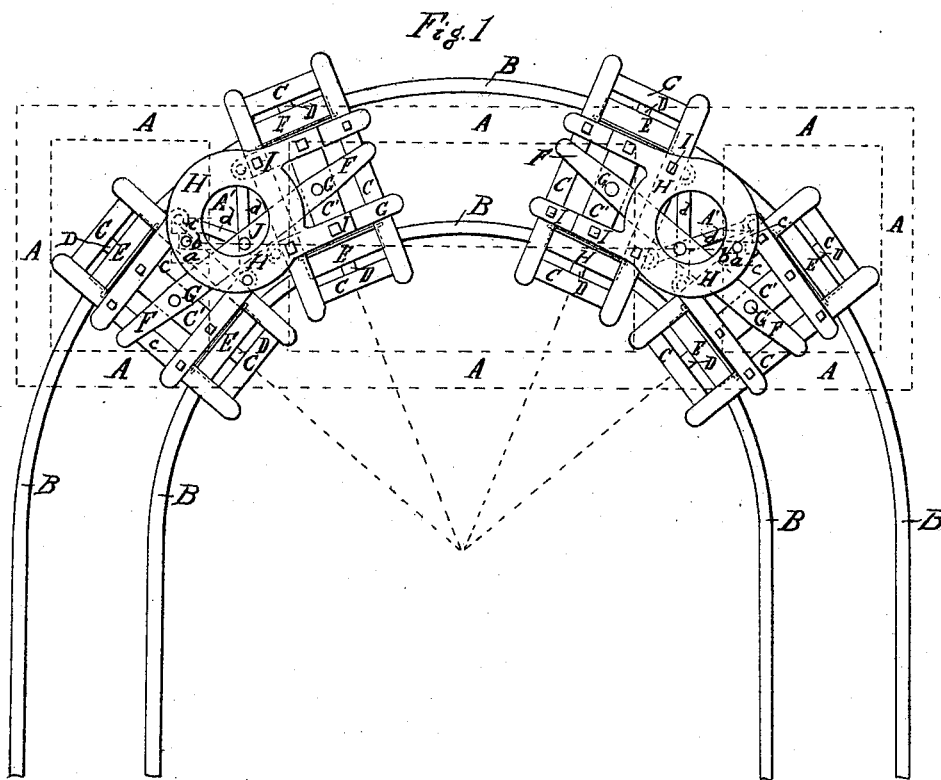


I. N. STANLEY.  
CAR TRUCK.

No. 1,512.

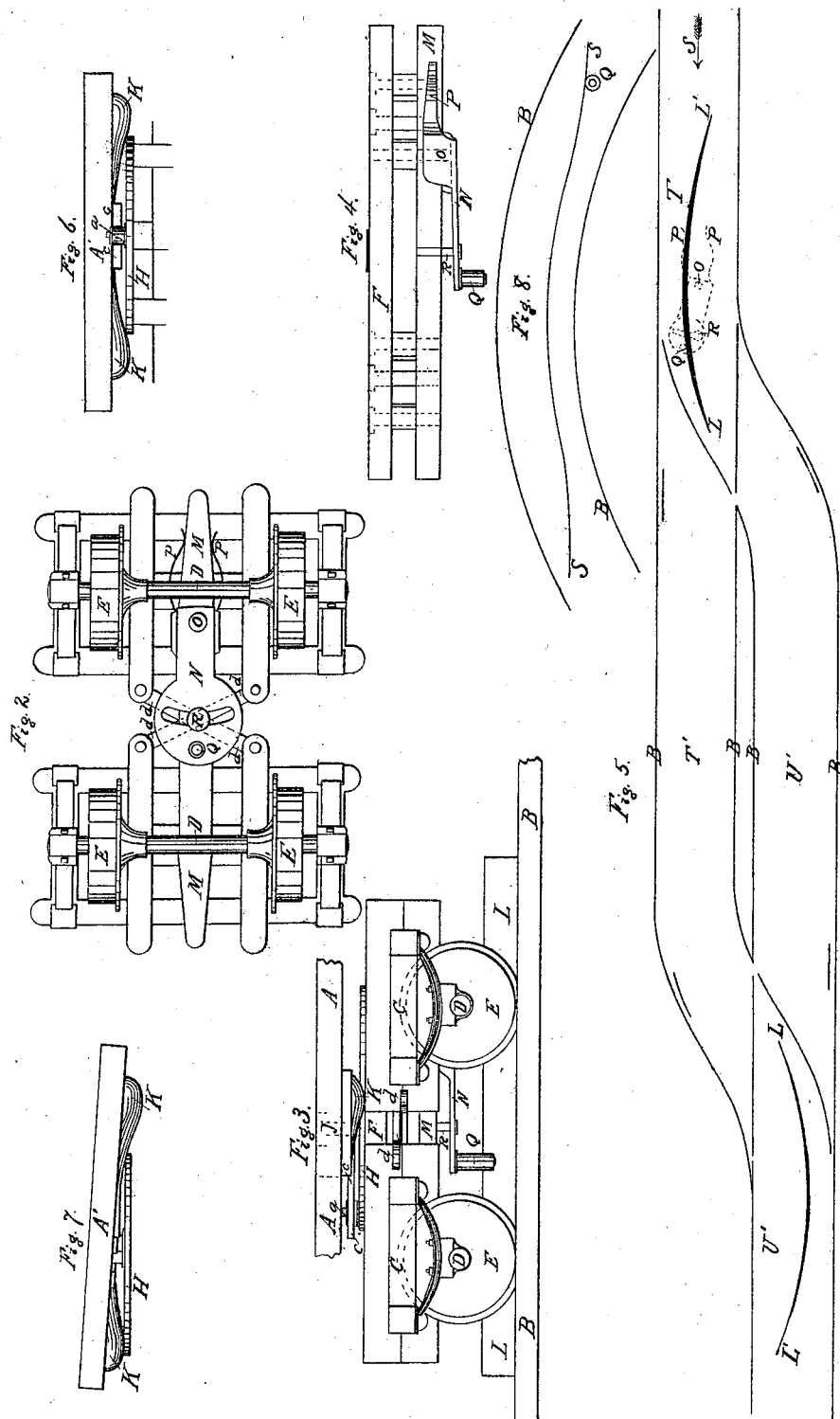
Patented Mar. 12, 1840.



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# UNITED STATES PATENT OFFICE.

ISAAC N. STANLEY, OF PHILADELPHIA, PENNSYLVANIA.

MODE OF CONSTRUCTING CARS OR CARRIAGES FOR RAILROADS AND ALSO A MODE OF DISPENSING WITH SWITCHES ON SUCH ROADS AND PREVENTING THE CARS FROM RUNNING OFF WHEN PASSING AROUND CURVES.

Specification of Letters Patent No. 1,512, dated March 12, 1840.

*To all whom it may concern:*

Be it known that I, ISAAC NEWTON STANLEY, of the city of Philadelphia, in the State of Pennsylvania, have invented an improvement in the manner of constructing eight-wheeled cars, carriages, or locomotives to be used upon railroads, by which manner of constructing them they are more perfectly adapted to turn upon curves in such roads than any which have been heretofore made, and that I have also invented a further improvement in railroads and railroad cars, carriages, or locomotives, by means of which improvement the use of switches is rendered unnecessary, and the locomotives, cars, or trains, are made to take the designated track with undeviating certainty and without the requiring of any care or attention on the part of the engineer or conductor; and I do hereby declare that the following is a full and exact description of my said improvements.

Figure 1, in the accompanying drawing, represents two four-wheeled trucks, constituting, when connected together by a suitable connecting frame, or car bed, the running gear of an eight-wheeled car or carriage. The dotted lines A, A, A, represent such a car bed, or general connecting frame. It is shown by dots only, to prevent its hiding the parts of the trucks which are below it. These trucks are represented as situated upon a part of the road B, B, where the rails have a quick curvature, to show the more distinctly, the manner in which they adapt themselves thereto. C, C, C, is the framing of the trucks, by which the axles D, D, D, of the wheels E, E, are sustained, each of these frames carrying two wheels. F, F, is a connecting bar, uniting two such frames, and converting them, in conjunction with the cross bars or connecting rods d, d, shown more distinctly in Fig. 2, into a four-wheeled truck. G, G, are the connecting bolts, or transoms, attached to, or passing into, the center piece C', of each frame, and upon which they swivel, so that the axles may always be capable of standing in the position of the radii of the curvature, which they are made to do by the following device. H, H, are metallic plates, or castings, which from the form given to them and the office which they perform I have denominated hounds. These are bolted as at I, I, to the

inner frames of each of the trucks. From the upper sides of these hounds rise bolts or studs at a, a, which carry friction rollers or sliding pieces b, b, that slide in slots made in a metallic plate attached to the car bed or general frame A, A. These slotted pieces of metal are shown by the dotted lines c, c. The main, or general frame or car-bed A, A, serves to connect the two four-wheeled trucks together by means of transoms or by means of two king bolts passing through the two cross pieces A', A', of said frame, and into the holes J, J, in the middle of the connecting bars F, F.

In Fig. 3, which is a side view of one of the four-wheeled trucks, A, A, is a part of the car-bed, or general connecting frame, the dotted line J, one of king bolts passing through it and into the connecting bar F; c, c, the slotted metal plate mentioned above, with the stud a, projecting up from the hounds H, and carrying the slide, or friction roller, through which said stud passes. In this, and all the other figures the same letters of reference are used to designate like parts.

By this arrangement of the respective parts above described, the centers of the transoms, or the king bolts which enter the holes J, J, in the connecting bars F, F, and the studs a, a, being necessarily in a right line in whatever position the truck frames may be placed, if the two frames of one four-wheeled truck adapt themselves to a curve, as shown in Fig. 1, the frames and axes of the other truck, from being in like manner attached to the general frame, or car-bed A, A, will do the same, the action on the two four-wheeled trucks being necessarily simultaneous.

It has been the practice in curves upon railroads to elevate the outer rail above the inner for the purpose of counteracting the tendency of the carriages to run off the rails; by their centrifugal force; but I have devised a mode of effecting this object by means of the load, or car, itself, which cause to incline inward whenever the truck, or car, wheels enter upon a curve. To effect this I make two projections on the lower side, or bolster, of the general frame A, A, as shown at K, K, in the cross section Figs. 6 and 7, and at K in the side view Fig. 3, which projections rest upon the circular part of the hounds and when on a straight road

keep the general frame or car-bed even, but when the hounds are moved on one side by the action of a curve cause the frame to rise on the side toward the outer rail and to be depressed on the other, as shown in Fig. 7. It will be apparent that instead of the sliding projections K, friction rollers may be used.

My improvement for dispensing with switches, and guarding locomotive, or carriage, in its transition from one track to another, is as follows: Upon the track of a railroad, in those places where the tracks are doubled so as to form a turn-out, I place what I denominate a guard-rail, which guard-rail is placed in a position inclining from one side of the track to the other, and crossing the middle thereof. L, L', in Fig. 5, represent a top view of two such guard rails, and L, L', Fig. 3, a side view of one, projecting, as will be seen, above the level of the road-rail. To the underside of the locomotives, trucks, cars, or carriages, which are to pass a turn-out, I attach an apparatus, called the guard apparatus, which is to be acted upon by the above-named guard rail. This apparatus is shown in Figs. 2, 3, and 4, Fig. 2, showing the underside of a truck, Fig. 3, a side view, and Fig. 4, a sectional side view of a part thereof.

In Fig. 2, M, M, is a connecting bar corresponding with F, F', in Fig. 1, which bars are bolted together as in Fig. 4, and turn on the same center G. To this bar, a plate of metal N, is attached by means of a pin O, upon which it turns when acted upon by the guard rail; this is seen also in Figs. 3, and 4. P, P, are two springs attached to the plate N, and embracing the two sides of M, serving to keep the plate N, straight with it, excepting said plate be forced toward either side, when the springs will yield. At Q, a stud projects down from the plate N, and carries a friction roller, which is to come into contact with the guard rail, and direct, or guard, the train. R, is a pin upon which the plate N works, by means of the slot shown as made across it, and serving to govern the distance to which said plate can turn. I intend to apply the said guard apparatus either to one carriage at each end of the train or to the whole number, should I deem it necessary or to apply two to each truck of each carriage.

When a locomotive truck, or carriage, thus provided, and constructed, approaches the turn-out, the friction roller Q, will be brought into contact with the side L', of the guard rail, which will carry the plate N, over, as shown by the dotted lines in Fig. 5, bringing it into contact with the pin R, and will thus compel the wheels to retain their position and force them to keep the proper track, with unerring certainty, notwithstanding any obstruction placed or accidentally

existing on the rails. In situations where there is considerable curvature in the road, and it may be deemed desirable to obtain additional security against the danger of running off the track, I place a guard rail along the track, to the necessary distance, in such manner as will effectually attain this object, and render it safe to pass around the curve at a much higher velocity than would otherwise be admissible. This arrangement is shown in Fig. 8, where B, B, are the rails of the curved track, and S, S, the guard rail, the two ends of which are to be placed nearer to the outer curved rail than the center of the track, so as to insure the passing of the friction roller Q, of the guard apparatus N, on the side thereof toward the inner curve, and which will, from the form of the guard-rail, be brought to its full bearing, by bringing the pin R, of the guard apparatus to the end of the slot in which it works. It will then be impossible, without breaking the apparatus, for the carriage to be thrown off the track.

Manner of operation: Let a train be passing in the direction indicated by the arrow S, Fig. 5, along the track T, the effect of the guard-rail on this track would be to prevent the leading carriage from being thrown, from any accidental inequality, on to the side track U', and to compel it to keep straight on, and passing the track T', it would necessarily pass on to the track U, where it would be uninfluenced by the guard rail. Should it then become necessary for it to back to allow the passing of another train on the track U', the roller Q, which acts upon the guard rail, will come into contact with its side L', and compel the backing carriage, or train, to pass on to the track U, and thence to T, where it is to go on beyond the end of the guard rail L', after which it is to go forward on to the track T, and remain there until the other train has passed it. In the case of branch roads the same principle is to be applied, it being necessary that the train passing in one or the other direction should be made to back, under the operation of a guard-rail, by which means the use of switches will not be required, and as these branch roads usually meet at relay houses, there will not, in this case, be the loss of a minute in time. The same arrangement will remove all objection to the accommodation side rails at mills, warehouses, &c., by making it necessary that the cars should back on to said accommodation rails. These accommodation side rails are in all cases to lead off from a double track, as at T', U', and in such direction as shall make it necessary for the cars to back from one of such double tracks on to the accommodation rails.

It will be seen by any competent machinist, that what I have denominated the

guard-rail may be so constructed as that it shall become a guide rail, and compel a car, or train, to pass from the track T, on to the track U'. It will also be manifest to every competent engineer or machinist that what I have called the guard apparatus must be so modified as to adapt it to the particular kind of locomotive, or carriage which is to take the lead upon the track; such adaptation being dependent upon circumstances, and also being within the province of any skilful machinist, need not be pointed out after the principle of action has been fully made known.

Having thus fully described the nature of my improvements and the manner in which the same are to operate, what I claim as my invention and desire to secure by Letters Patent, is as follows:

1. I claim the manner in which I construct and combine the two four-wheeled trucks, as above set forth, by which the axles are made, simultaneously, to conform themselves to the radii of the curvature of the track, that is to say, the manner in which I connect the parts which I have denominated the hounds with the respective frames of the trucks, and with the general frame, or car bed, so that the two studs, or slides, which work in the slotted metallic plates *c, c*, and the two tran-

soms, or king bolts, always standing in a right line, shall compel the respective axles to conform themselves to the curvatures of the road, by an arrangement of parts, substantially the same with that set forth.

2. I claim the manner of causing the load to incline over toward the inner rail of a curve, by means of the projections below the bolster, operated upon by the hounds, or by any analogous arrangement, as described.

3. I claim the manner of compelling the locomotive, or carriage, to keep the proper track, by the aid of guard or guide rails, constructed and located as herein described and operating upon a guard or guide apparatus, substantially the same with that herein made known, for the purpose of dispensing with switches and other analogous devices, and rendering the passing of the train upon the proper track independently of the engineer, or conductor thereof.

4. I claim, also, the use of the guard rail, and guard apparatus, for preventing the running of the carriage from the track, as described.

ISAAC NEWTON STANLEY.

Witnesses:

THOS. P. JONES,  
GEORGE WEST.