2 Sheets--Sheet 1.

S. USTICK.
Car-Coupling.

No. 164,113. Patented June 8, 1875.

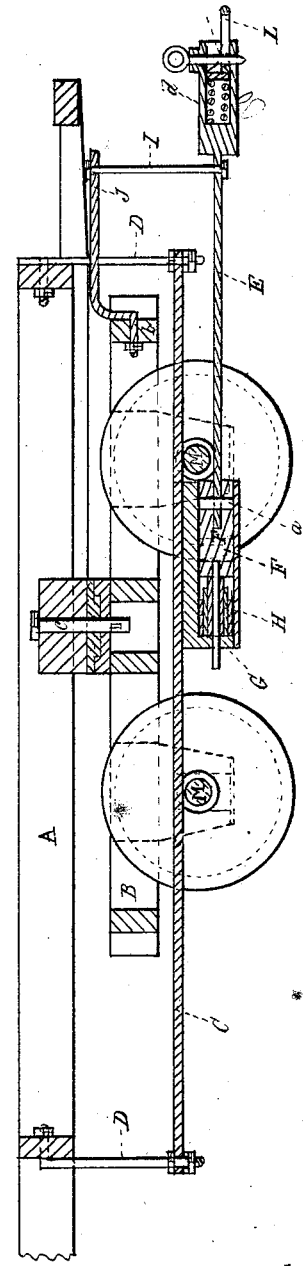

FIG. 1

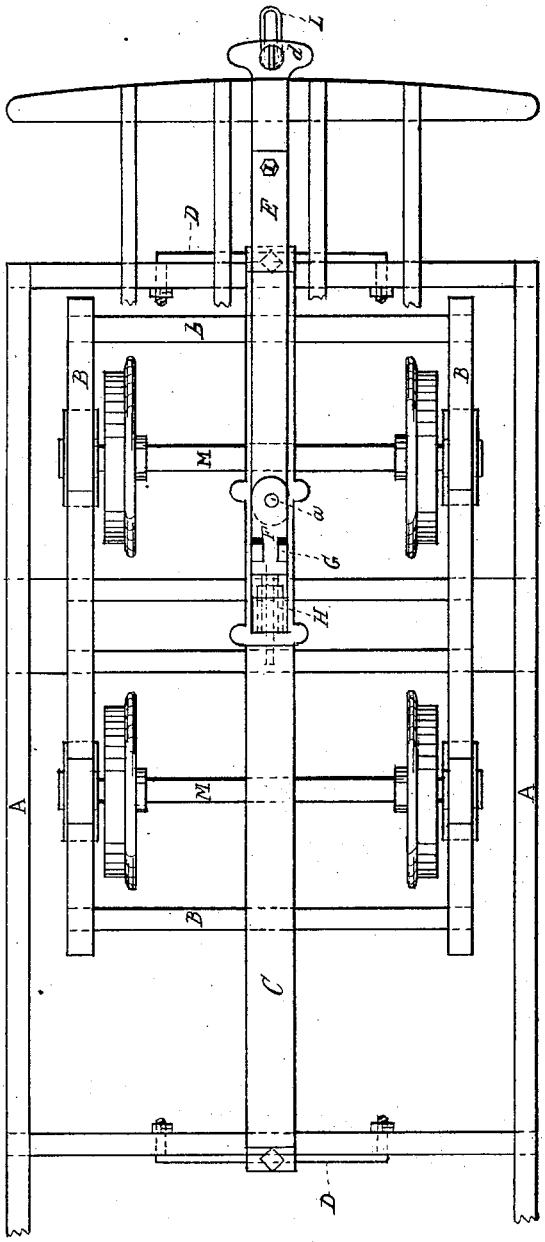

FIG. 2

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Isaac Rinaje

Inventor;
Stephen Ustick

2 Sheets--Sheet 2.

S. USTICK.
Car-Coupling.

No. 164,113. Patented June 8, 1875.

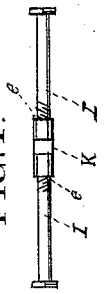

FIG. 4.

FIG. 5.

FIG. 6.

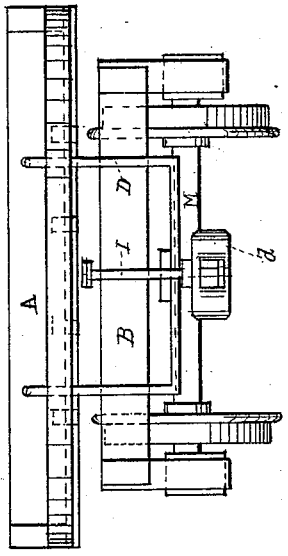

FIG. 3

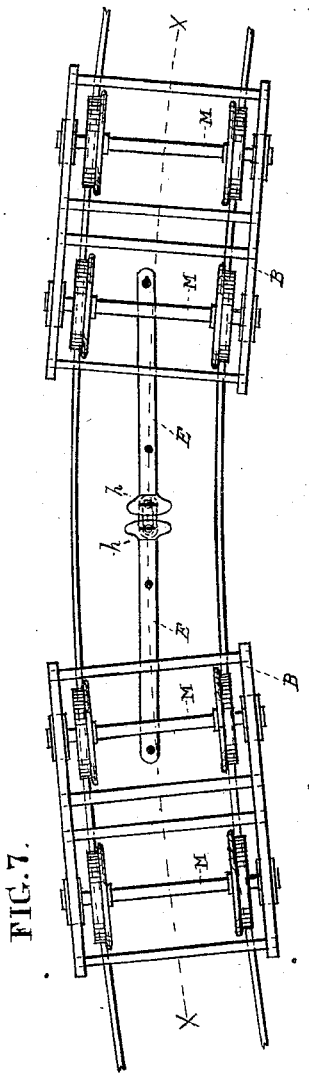

FIG. 7.

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UNITED STATES PATENT OFFICE.

STEPHEN USTICK, OF PHILADELPHIA, PENNSYLVANIA.

IMPROVEMENT IN CAR-COUPLINGS.

Specification forming part of Letters Patent No. **164,113**, dated June 8, 1875; application filed August 14, 1874.

To all whom it may concern:

Be it known that I, STEPHEN USTICK, of the city and county of Philadelphia, and State of Pennsylvania, have invented certain Improvements in Car-Couplings, of which the following is a specification:

The main object of my invention is a free and easy running of a train of cars, especially in turning curves, whereby to overcome the tendency to run off the track, and the consequent immense friction and wear of the rails and flanges of the truck-wheels.

The invention relates to the following particulars: Beneath the truck-frames of each car of the train there is a longitudinal bar or beam, which extends the whole length of the car for the support of the draw-bars. It is supported by means of hangers connected with the bottom frame of the car. The draw-bar may be arranged either above or beneath the axles; but I prefer placing them beneath the latter, so that the line of draft may be as near as practicable to the horizontal plane of the rails of the track, and thus avoid as far as possible the leverage exerted upon the rails by the side pressure of the flanges of the wheels, which takes place when they are placed, in the usual manner, far above the rails, and the cars are running on a curved track. The object of running the bar the whole length of the car, instead of employing a short bar at each end, is to obtain a much stiffer resistance against the bumping or draft of the draw-bars. The inner ends of these bars are pivoted or otherwise jointed to the above-described longitudinal bar, or to spring-slides connected therewith. Their outer ends are suspended and held by means of vertical rods, which are jointed at their upper ends to rods projected from the outer ends of the truck-frames, so as to admit of the oscillation of the vertical rod, and to admit of the contiguous cross-bars, that are coupled together, turning freely on their center-pins, and remaining in line with each other when the trucks, in turning curves, are brought out of line. A provision is also made by this arrangement for the draw-bars when uncoupled, if not in line with their respective trucks, to automatically assume such position, so that they may be automatically coupled, either on a curved or straight track, as hereinafter fully described. The above-mentioned vertical rods are divided in their middle, and coupled by means of right-and-left-hand screws, for the adjustment of the draw-heads to make the contiguous ones of equal height. In order to keep the coupling-links in a horizontal position for the automatic coupling of the cars, I connect a spring with one end, which bears against the top side of the socket of the draw-head, with which it is previously connected.

In the accompanying drawings, Figure 1 is a longitudinal vertical section of one end of the bottom frame A of a car-body, and a truck, B, in connection therewith, provided with my improved coupling. Fig. 2 is a reversed plan view of the same. Fig. 3, Sheet No. 2, is an end elevation. Fig. 4 is a side view of the vertical rod I, on an enlarged scale. Fig. 5 is a like view of the coupling-link L. Fig. 6 is an edge view of the same. Fig. 7 is a plan view, on a diminished scale, of two trucks coupled on a curved track.

Like letters of reference in all the figures indicate the same parts.

A represents one end of the bottom frame of a car-body. B is the truck, connected therewith in the usual manner. C is a longitudinal bar or beam beneath the truck-frames, and supported by any number of suitable hangers, D, connected at their upper ends to the frame A by means of screw-bolts. The draw-bars E are connected at their inner ends with the bar C by means of spring-slides F, with which they have a joint connection, as seen in Figs. 1 and 2—the bars being free to oscillate either to the right or left upon the pin *a*. The slide F is guided by the box G, which also contains the resisting-spring H.

The outer end of the bar E is supported by means of the vertical rod I, the lower end of which has a joint connection with the bar, and its upper end a like connection with the outer end of the rod J, the inner end of which is permanently connected with the end *b* of the truck, as seen in Fig. 1. The point of suspension of the rod I is in the central vertical plane of the truck, so that when the cars run onto a curve, the two rods I I, which support the outer ends of two draw-bars coupled together, shall be on equal angles from the ver-

tical plane, as their lower ends are swung right or left by the change in the positions of the outer ends of the draw-bars from said vertical plane, caused by the oblique positions of the trucks, which they assume by running onto the curve, as seen in Fig. 7, to obtain equal height of the draw-heads. Another object is that when any of the cars are uncoupled, the draw-heads shall always be brought automatically into the central vertical plane of the trucks (if they should not be in that position) by the weight of the draw-heads bringing the rods I into their vertical position, so that any two contiguous draw-heads, when brought together for coupling, may fairly meet each other, and admit of an automatic coupling, whether the cars are either on a curve or straight track.

I provide for the altitudinal adjustment of the draw-heads, so as to have the sockets *d* of the contiguous ones of equal height, by constructing the rods I in two pieces, which have right and left hand screw-threads *e e*, with which the coupling-bar K connects.

If desired, the draw-heads may have a sliding movement on the draw-bars E, in the usual manner, instead of having a permanent connection, as shown in the drawings. In this case the slides F and spring H should be dispensed with, and stationary pins *a* connected with the longitudinal bar C, or its equivalent, for the joint connection of the inner ends of the bars.

To prevent the coupling-links L drooping at their outer end, I provide one end with a spring, *h*, as seen clearly in the enlarged views, Figs. 5 and 6. This end is connected with the socket of one of the draw-heads to be coupled, and the spring, bearing against the upper side of the socket, presses the link upon the bottom of the same, and holds it in a horizontal position, so as to admit of its projecting end entering the socket of the other draw-head.

It will readily appear that by the free oscillation of the draw-bars upon their pivots *a*, any two, when coupled together, will be in line, even on a curve track, as seen in Fig. 7; and if they oscillate on centers vertical with the centers of the trucks, the line of draft will be inside of the tangent of an imaginary center line of the track, and that the cars will thereby have a slight inclination toward the inner rail, thus avoiding the immense friction caused by the flanges of the wheels being borne hard against the outer rails when the draw-bars have a rigid connection with the cars in the usual manner. The slight inclination thus given toward the inner rail will, however, not be more than equivalent to the centrifugal force of the cars running at a moderate speed; but, if preferred, the line of draft may be made to cut the tangent by placing the center-pins the requisite distance outside of the central axis of the truck, as in the plan view, Fig. 7.

I claim as my invention—

1. The bar C, suspended by means of the hangers D, and extending from end to end of the car, in combination with the draw-bars of a railroad-car, as set forth.

2. The rod I, having a coupling, K, in combination with the draw-bar E and rod J, for adjusting the height of the bar, and admitting of its oscillating freely, substantially as described.

3. The combination of the pivoted draw-bar E, permanent bar C, and rods I and J, substantially as and for the purpose set forth.

STEPHEN USTICK.

Witnesses:

THOMAS J. BEWLEY,

PETER WEAVER.