

C. F. ALLEN.

Car Truck.

No. 65,788.

Patented June 18, 1867.

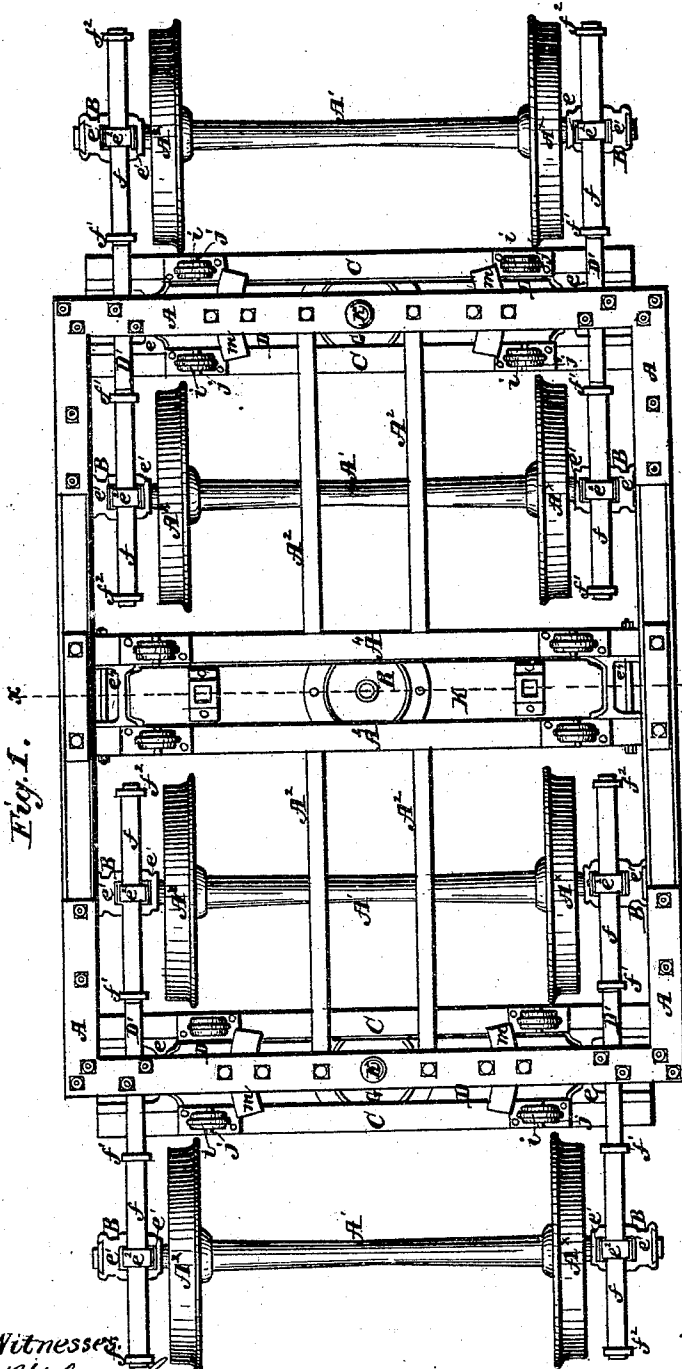


Fig. 1.

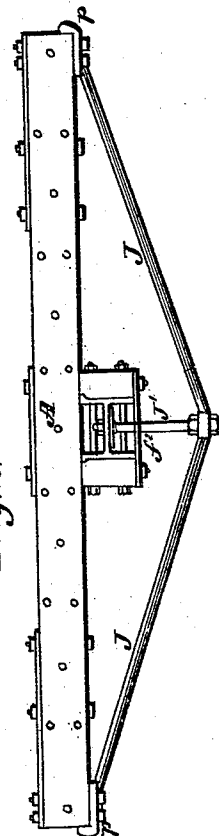


Fig. 2.

Witnesses:
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Matson, Hewitt & Hammon

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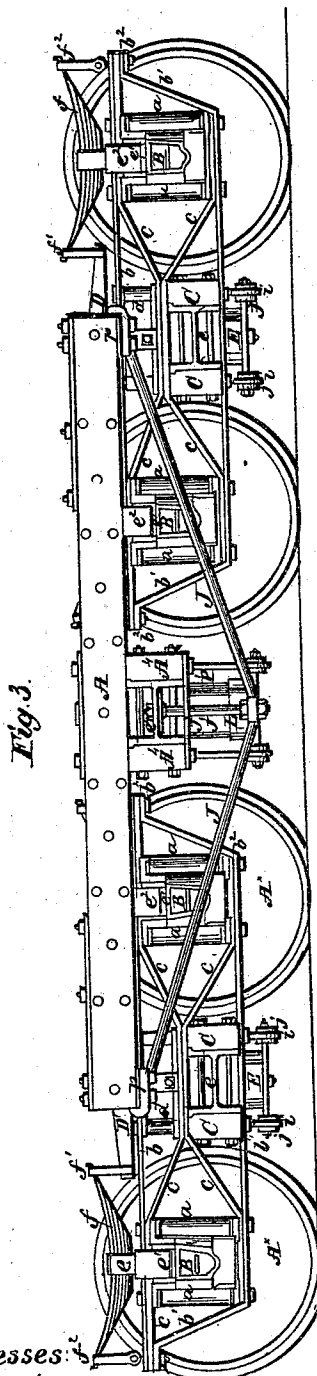


Fig. 3.

Witnesses:
R. J. Campbell.
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Fig. 4.

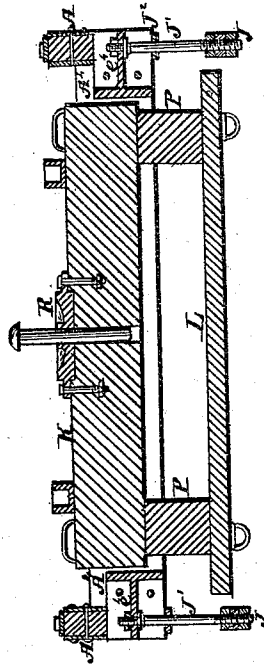


Fig. 6.

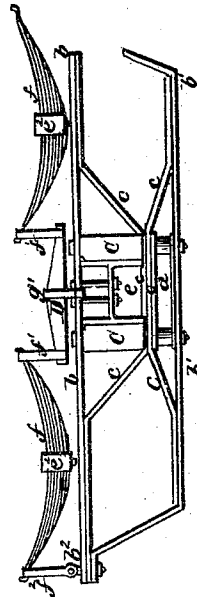
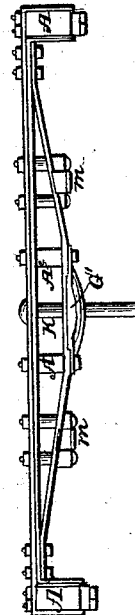


Fig. 5.



Inventor:

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UNITED STATES PATENT OFFICE.

C. F. ALLEN, OF AURORA, ILLINOIS.

IMPROVED CAR-TRUCK.

Specification forming part of Letters Patent No. 65,788, dated June 18, 1867.

To all whom it may concern:

Be it known that I, C. F. ALLEN of Aurora, in the county of Kane, State of Illinois, have invented an Improved Eight-Wheel Truck for Railroad-Coaches; and I do hereby declare the following to be a full, clear, and exact description thereof, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1, Sheet 1, is a plan view of my improved eight-wheel truck, complete. Fig. 2, Sheet 1, is a side elevation of the frame which connects the two four-wheel trucks together, and upon which one end of a coach is supported. Fig. 3, Sheet 2, is an elevation of one side of the eight-wheel truck. Fig. 4, Sheet 2, is a transverse section through the center of the truck-frame, taken in the vertical plane indicated by red line *x x* in Fig. 1. Fig. 5 is a view of one end of the truck-frame. Fig. 6 is a modification of the braced frame of one of the four-wheel trucks.

Similar letters of reference indicate corresponding parts in the several figures.

This invention relates to certain novel improvements on the construction of trucks for railroad-coaches, the main object of which is to sustain the ends of the coaches upon eight-wheel trucks composed of two independent four-wheel trucks, connected together by a platform in such a manner as to relieve the coaches from shocks and concussions, and thus afford ease and comfort to the passengers, and also to greatly lessen the danger in passing over the curves and inequalities of the track.

The nature of my invention consists mainly in connecting together two independent four-wheel trucks by means of a platform or horizontal frame, which is sustained at its ends by pivotal connections upon vertically-elastic and laterally-swinging beams, applied centrally to the truck-frames, which platform or frame is provided with a central elastic swinging beam for sustaining upon it one end of a coach, so that each end of the coach will be supported by three bearings, so disposed as to bring the weight of the load centrally between the axles of each truck, as will be hereinafter explained. It further consists in providing for sustaining the platform and its swing-beam and the truck-frames with their swing-beams upon the axle-

boxes of the trucks by means of springs and equalizing-beams, and in so constructing, trussing, and tying together the frames, that great strength and lightness are secured, as will be hereinafter described.

To enable others skilled in the art to understand my invention, I will describe its construction and operation.

In the accompanying drawings, A represents a horizontal platform, which is sustained at its ends upon two four-wheel trucks, as will be hereinafter explained. As both of these four-wheel trucks are alike in form and construction, a description of one will give a clear understanding of the construction of the other. $A^x A^x$ represent the wheels of the truck, and $A^1 A^1$ the axles thereof. The axles enter boxes B B, which may be constructed in any suitable manner for supporting the superincumbent load upon the ends of the axles, and which are applied between pedestals *a a* and held in place against lateral displacement, so as to rise and fall freely. These pedestals are made of cast metal, and are secured in place between the horizontal tie-bars *b b^1* and braces *c c* by means of bolts which pass through the pedestals and through the said bars, as shown in Fig. 3. The ends of the pedestals *a a* are constructed with flanges, which overhang the edges of the braces *c c*, and thus prevent lateral displacement of these pedestals. The horizontal tie-bars *b* extend longitudinally from one end of the truck-frame to the other, and the braces *c c* and the tie-bars *b^1* are carried beneath the pedestals and lower braces *c*, and secured at their ends to the extreme ends of the bars *b* by means of vertical eye-bolts *b^2*. These bars extend in horizontal planes parallel to the upper bars *b* between the outer pedestals, and are then turned upward, so as to form an elongated stirrup or support, as shown in the drawings. Between these horizontal bars *b b^1*, and below the intermediate horizontal portions of the braces *c c*, the ends of horizontal transverse beams C C are firmly secured by means of vertical through-bolts, which pass down through the bars *b b^1*, braces *c c*, and pillow-blocks *d d*, and are tightened by means of nuts upon their lower ends. The beams C C are in the middle of the length of the truck-frame, and they are secured in place, as aforesaid, so as to leave a space between them for receiving

a swinging beam, D, which will be hereinafter described.

In Fig. 3, the beams C C are shown as being arranged below the intermediate horizontal portions of the braces *c c*, with the pillow-blocks *d* between these braces and the upper bar *b*, but in Fig. 6 the braces *c c* and pillow-block *d* are shown as being located beneath the beams C C. The braces *c c* extend from the ends of their respective pillow-blocks upward and downward, and pass over and beneath the pedestals *a a*, and are secured by bolts, as shown in the drawings. Between the ends of the two transverse beams C C metal boxes *e e* are firmly bolted by transverse bolts. These boxes are composed of horizontal and vertical webs, and form metallic bearings or abutments for the metal bars *b¹* and braces *c*, so that a more unyielding and rigid connection will be effected than could be made if the metal bars were bolted to the wooden beams C C. The inner ends of said boxes *e e* also form end abutments for the swinging beam D, as shown in Fig. 1. The pillow-blocks *d d* extend across the beams C C, and form, in conjunction with their respective boxes *e e*, solid intermediate bearings or braces for preventing a central vertical displacement of the longitudinal bars and braces composing the sides of the truck-frame. They also prevent the collapsing or spreading out of said bars and braces. The braces *c c* are designed to serve as braces for stiffening and strengthening those portions of the sides of the frame which extend beyond C C and pillow-blocks *d d*, as shown in Fig. 3. Upon the upper ends of the four axle-boxes B flanged steps *e¹* are put, which receive the ends of saddles *e²* that are placed astride the bars *b c*, so as to allow the truck-frame to rise and descend freely while they remain stationary upon their respective boxes. Upon the upper ends of these saddles compound semi-elliptic springs *f* are supported and properly fastened, which springs are connected, at their inner ends, to the free ends of equalizing-beams D' by means of loops *f¹*, and at their outer ends to the eye-bolts *b²*, by means of loops *f²*, as shown in Fig. 3. The levers or beams D' are held up against knife-edge bearings, which are in saddles *g¹*, that are secured firmly to the pillow-blocks *d*. The fulcrums of the equalizing-beams D' are in a vertical plane passing centrally between the transverse beams C C, and consequently in the center of the length of the truck-frame. The bearing of each spring *f* is in a vertical plane intersecting the axis of its respective axle. Consequently the superincumbent weight upon the swing-beam D will be uniformly received upon the four axle-boxes and upon both axles; and, while this is the case, the four springs *f* will form an intermediate support for the truck-frame upon its axles, and allow for a free vertical and elastic play.

It will be seen, from the above description of the construction of the four-wheel truck-frames, that I combine strength and lightness with durability and great rigidity. I have

metal abutting against metal at every point, and thus secure the points permanently against looseness.

The swing-beam D is constructed of such length as to allow it a free endwise play between the boxes *e e*, and it is supported upon a beam, E, by means of india-rubber or other suitable springs, so as to allow it to have a vertical elastic motion. If desirable, the ends of this beam D may be caused to abut against springs, to avoid any jar or concussion which might be caused by their striking against the metal boxes *e e*. The beam E is suspended from the transverse beams C C by means of elongated loops *i i* and rocking-blocks *j j*, as described in my Letters Patent dated on the 24th day of April, 1866, which allow the beam D to have a free and endwise movement, and also prevent the lateral shocks and concussions on the truck-frame from being communicated to it. On top of this beam D, and in the middle of its length, is a plate, G, through which is a vertical hole for receiving a pivot-pin, *k*. This plate is constructed with a concavity in its face and a central elevation for receiving the face of a plate, G', of a corresponding shape, which is bolted to the transverse trussed brace of the platform A. This plate G forms the bearing for one end of the platform A, and it is so constructed that the central elevation which is formed on it will prevent the parts from binding upon the pivot-pin or bolt *k*.

The platform A is of a rectangular shape, and consists of two longitudinal compound beams, which are made of wood, and strengthened by bolting metal plates on their vertical sides, and also at certain points upon their upper surfaces, as shown in Figs. 1 and 2. These longitudinal bars or beams are connected together at a suitable distance apart, and in planes parallel to each other, by means of transverse bars or plates at the ends of said beams, and also by means of two central transverse beams, A⁴ A⁴. The end bars are strengthened by trusses, to the middle of the length of which the convex bearing-plates G' are secured; also, segment-shoes *m m*, which latter slide upon elevations upon the swing-beam D. These end bars are strengthened against longitudinal strain by means of the intermediate longitudinal stay-beams A³ A³, which are introduced between the said end beams and the central beams A⁴ A⁴, as shown in Fig. 1. To prevent the platform from yielding or breaking down in the center, I employ braces, J, on both sides of this platform, which incline from the ends thereof to the central vertical bolts J¹, which are secured to the horizontal webs of metallic boxes *e¹ e¹*, which are secured between the beams A⁴ A⁴, as shown in Figs. 2 and 3. The ends of these braces or trusses J are constructed with lipped shoes *p p* upon their ends, the lips of which receive the ends of the longitudinal beams. The centers of these braces are perforated to receive through them the bolts J¹, and the plates J² are applied to the bottom sides of the beams A⁴ A⁴,

for the purpose of supporting said bolts. The platform A is provided with a swinging beam, K, which is supported between the beams A⁴ upon a transverse beam, L, by means of springs P P. The lower supporting-beam L is suspended from the beams A⁴ by means of elongated loops and rocking bearings, as described, for the swinging truck-beams D, as shown in Fig. 3. This swinging beam K is provided on its upper surface and in the middle of its length with a concave bearing-plate, R, constructed like the bearing-plate G on the swinging beams D, which plate receives a corresponding plate, which is secured to the bottom of the car-body or coach. A pivot-bolt which passes through the bed of the coach and through the plate R and its beam, connects one end of the coach to the platform.

The eight-wheel truck which I have described is designed for supporting one end only of a coach, the opposite end being supported by a truck similarly constructed.

It will be seen that each one of the four-wheel trucks are allowed to have motions independent of the other, and that the car or coach body is not mounted directly upon these trucks, but upon the swing-beams of a platform which has its end bearings upon the swing-beams of the trucks. It will also be seen that the weight upon the swing-beam K of the platform A is transferred uniformly upon the four axles of both trucks through the medium of vertically-yielding springs and laterally-swinging beams, which are so disposed as to relieve the coach from all injurious and unpleasant jar and concussion, and admit

of the four-wheel trucks accommodating themselves to the irregularities and curves of the road without straining the frame-work.

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

1. An eight-wheel truck, which is composed of two independent four-wheel trucks, connected together by means of a platform, A, which is supported upon and connected by pivots to laterally-swinging spring-beams, arranged substantially as described.

2. In an eight-wheel truck, the combination of the laterally-swinging and vertically-elastic beams D D and K, with the side springs *f f* and equalizing beams D' D', so arranged that the weight of the load upon the center of the platform A will be uniformly disposed upon all the axles of the trucks, substantially as described.

3. The connecting platform A, constructed of wood and metal, provided with a swinging beam, K, and strengthened by means of trusses or braces, J J, substantially as described.

4. In combination with the bars *b b'*, braces *c c*, pedestals *a a*, steps *e¹ e¹*, and saddles *e² e²*, the transverse beams C C, metal boxes *e e*, pillow-blocks *d d*, fulcrum-straps *g'*, and the equalizing-beams D D, with their springs and connecting-loops, all arranged and operating substantially as and for the purposes described.

C. F. ALLEN.

Witnesses:

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S. W. CAMPBELL.