

E. MILLER.
Car Coupling.

No. 56,594.

Patented July 24, 1866.

Fig. 2.

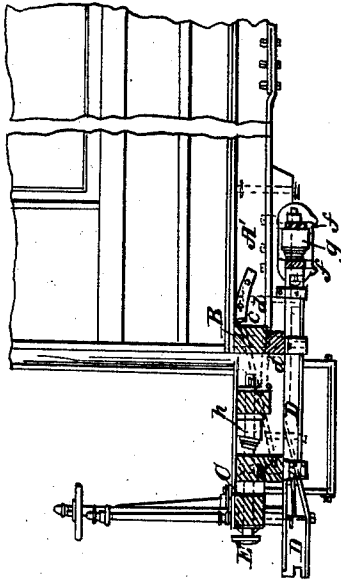


Fig. 4.



Fig. 5.

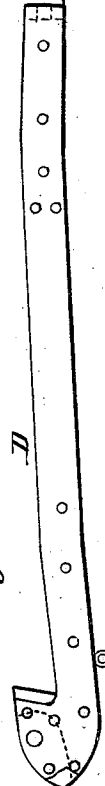
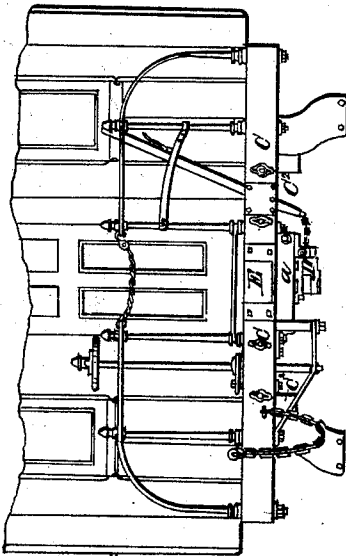
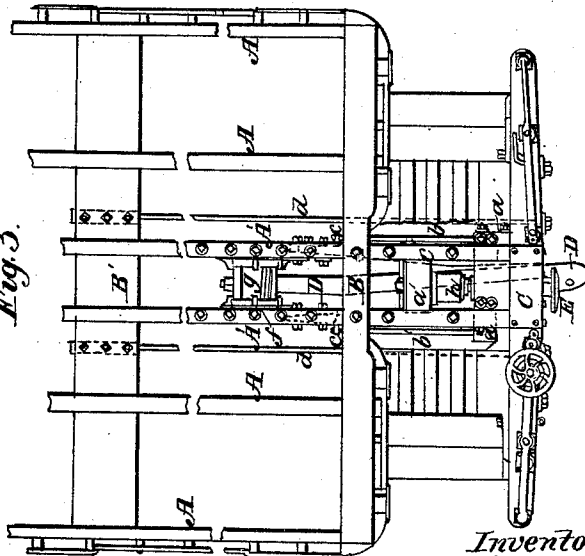


Fig. 1.



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Fig. 3.

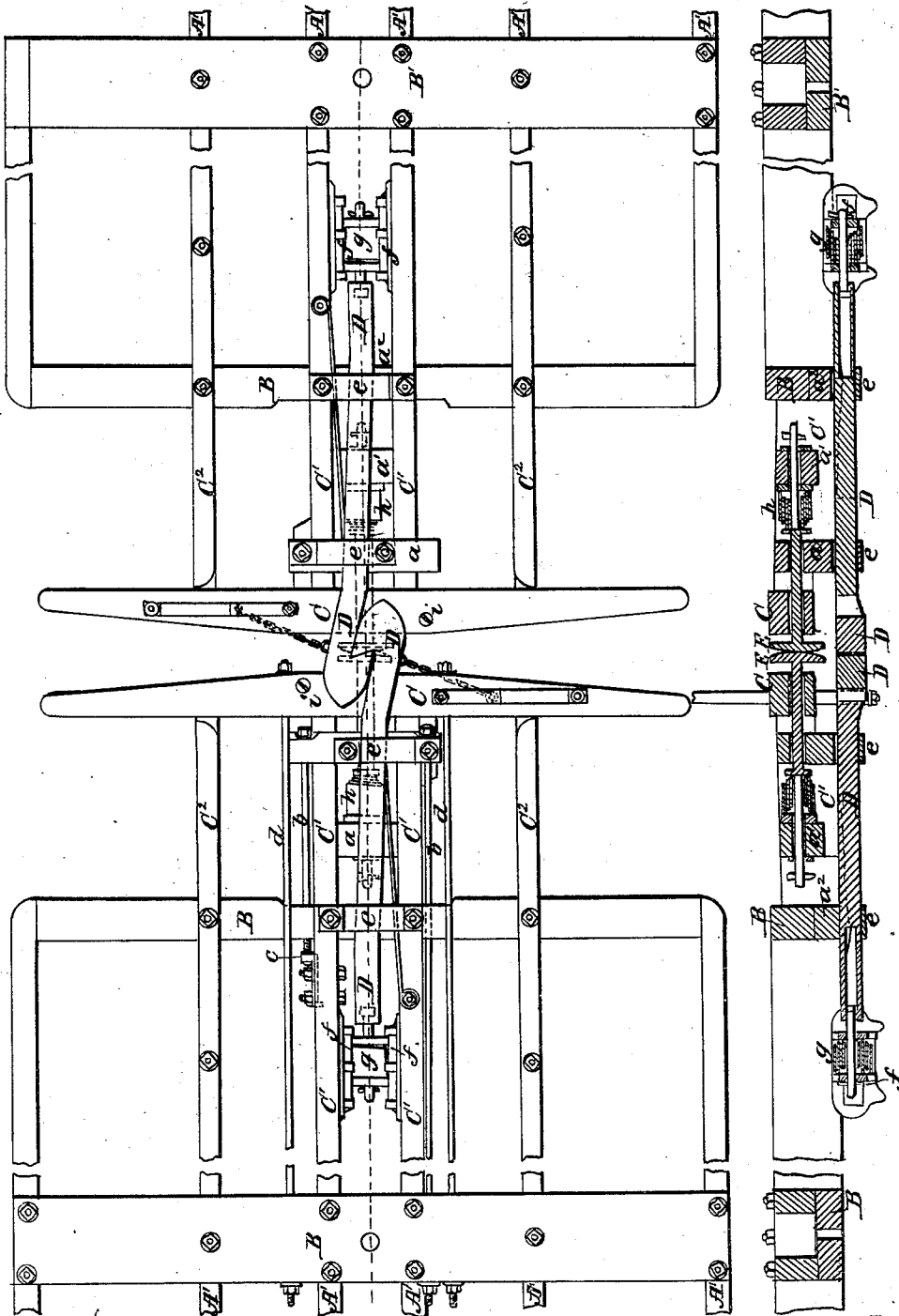


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UNITED STATES PATENT OFFICE.

EZRA MILLER, OF BROOKLYN, NEW YORK.

IMPROVEMENT IN RAILROAD-CARS.

Specification forming part of Letters Patent No. 56,594, dated July 24, 1866.

To all whom it may concern:

Be it known that I, EZRA MILLER, formerly of Janesville, in the county of Rock and State of Wisconsin, now of Brooklyn, in the State of New York, have invented certain new and useful Improvements in Railroad-Cars; and I do hereby declare that the following is 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 front elevation of one end of a car having my improvements applied to it. Fig. 2 is a longitudinal section taken vertically through one end of a car. Fig. 3 is a top view of Figs. 1 and 2, with the body of the car removed. Figs. 4 and 5 are views of my improved coupling-hook. Fig. 6, Sheet 2, is a bottom view, showing the ends of two cars coupled together. Fig. 7 is a longitudinal section taken vertically through Fig. 6.

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

This invention relates, in part, to certain novel improvements on the contrivances for coupling cars together which are described in my Letters Patent numbered 38,057 and 46,126, and also to certain substantive improvements in the construction of the platforms of cars, and in a mode of connecting together the several cars in a train to prevent shocks and to secure steadiness.

One object of my invention is to prevent the crushing or giving away of car-platforms in the event of collision between trains, and also to so strengthen the platforms that they shall be capable of resisting the sudden shocks to which they are subjected, by locating the buffer-beam and its supporting-timbers in or nearly in a plane with the sill-beam and longitudinal timbers of the car-bed, and employing, in conjunction with such elevated platform, a system of trussed braces, which are so applied as to tie the platform firmly to the car-bed, and also to sustain it against upward or downward strain, as will be hereinafter described.

Another object of my invention is to prevent the sudden and injurious jerks and concussions of cars in starting or stopping a train by the employment of centrally-arranged spring couplings and buffers, in such manner that these parts are under constant tension or compression when the cars are coupled together

and the buffer-heads are brought in contact with each other, thus forming a continuous connection of all the cars in a train, 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 A' represent the longitudinal beams, and B B' are the transverse beams, which are suitably framed together to form the car-bed.

C is the buffer-beam, which is secured to the longitudinal platform-beams C' C², that are halved and bolted beneath the longitudinal beams A A' of the car-bed, so as to abut against the bolster B' at their rear ends, and to project from the sill-beam B a suitable distance to give the proper length of platform. The upper edges of those portions of the beams C' C² are in or nearly in a plane with the top of the sill and buffer beams, and they are all in a line with the longitudinal beams A A', as shown in Figs. 3 and 6. This arrangement enables me to elevate the buffer-beam C in a plane with the timbers constituting the car-bed, so that these timbers will sustain the shocks upon the buffer-beams and prevent telescoping should there be a collision between two cars.

Another advantage is secured by thus elevating the buffers, which is that I am enabled to employ truss-braces in such manner that they sustain the platforms against upward or downward strain.

Between the two central beams C' C', I frame three strong cross-timbers, a a' a², which are firmly bolted in place with transverse bolts or ties, as shown in Fig. 3. These transverse timbers give great strength to the platforms and form a spring-pocket for the buffer-spring, and they also afford an opportunity of using the upward metallic trusses b. The forward cross-beam I call the "truss-beam;" the middle one, a', the "spring-beam;" and the rear one, a², which is directly below the sill B, the "suspender-beam."

The platform is trussed as follows: I use for the upward trusses b rods, which may be round or square, and of about one inch gage. I pass these rods b b through the outer ends of the truss-beam a, thence upward and backward, through the end sill, B, of the car-bed, as high

as possible, and screw them into metallic straps *c*, which are securely bolted to the beams *A'*, as shown in Fig. 3; or I carry said rods back through the bolster *B'*, where they are secured by nuts or other suitable fastenings. This mode of upward trussing by the help of the truss-beam *a*, I find much more convenient than by using the buffer-beam or longitudinal timbers of the platform for that purpose.

It is desirable to have the truss-beam *a* abut against shoulders formed on the bottoms of the beams *C' C'*, so that the through-bolts shall not be required to receive all the strain which is brought to bear upon said truss-beam.

For the lower trusses, *d d*, I use the buffer-beam *C*, and by its elevated position I am enabled to use the ordinary draft-rods for downward trussing. These rods *d* pass through the buffer-beam, thence downward and backward below the sill-beam *B*, and through the bolster *B'*, where they are secured by nuts, as shown in Fig. 6.

Before describing my improved system of compression between cars coupled together, I will describe the construction of the coupling-hooks and bumpers or buffers, and the mode of employing them in conjunction with the elevated platforms.

I formerly forged the coupling-hooks *D D*, which I found a very laborious and expensive method of making them. I now produce the body of the hook of cast-iron of the required shape and size, and in casting this portion I chill those surfaces which are exposed to the greatest rubbing and wear.

The cast-metal body of the hook has recesses formed in its upper and lower faces for receiving wrought-metal plates, which afford all the strength required. Studs are also applied to the cast metal for the purpose of riveting the wrought-metal plates in their places.

If desirable, short bosses may be cast on the cast-metal portion for entering recesses made partly or wholly through the wrought plates, and the rivets may be inserted either through said bosses or through the hook between them.

By reference to Figs. 4 and 5, it will be seen that I still employ the slots and vertical pin-holes for connecting the hooks to the linked couplings when this is required.

The curved form of the shank of the hook and the double-beveled head I also adopt, as set forth in my patents above referred to.

These hooks are applied to the bottoms of the car-beds, as represented in Fig. 6, which is a bottom view, their hooked heads being arranged so that when two cars are brought together they will spring out laterally and become interlocked, after which either levers or turning-rods may be employed for separating the hooks. The shanks of these hooks extend back, and are supported by means of stirrups *ee*, which are bolted to the bottoms of the longitudinal beams *C' C'* of the platform, and made of such width as to allow a lateral vibration to the forward ends of their respective

hooks. The rear ends of said hooks are suitably pivoted to short rods which pass through spring-boxes *ff*, and which are suitably acted upon by springs applied in said boxes, so as to retract the hooks when they are drawn outward, substantially in the manner described in my patent numbered 38,057.

The springs *gg* are used for pressing the forward ends of the hooks laterally and holding them in a position for coupling.

Above the hooks *D D* are the buffers *E E*, which are constructed with steel-faced heads and long shanks. The latter pass longitudinally through holes which are made centrally through the buffer-beams *C*, truss-beams *a*, and spring-beams *a'*, and are allowed to have free end play, restrained only in such movement by the springs *hh*, that are inserted in the pockets which are formed by the two cross-beams *a a'*, as shown in the drawings. Said springs *h* are so applied to the shanks of their respective buffers *E* that they will force the buffers outward, or act in the reverse manner of the coupling-hook springs *gg*, above described.

In order to prevent a rapid wearing away of the abutting faces of the buffer-heads, I slot the face of each head vertically, so as to form a tapering dovetail slot, into which is inserted a plate of hardened steel, as shown in Fig. 1, which plate may be held in place by riveting down the corners or in any other suitable manner. Instead of employing a steel plate, the head of the buffer may be case-hardened, so as to increase its durability. I, however, prefer the former method.

To prevent self-uncoupling of the hooks *D D*, I now employ the studs or stops *ii*, (shown in Fig. 6,) instead of the gates which I have described in my patent numbered 38,057. These stops are cheaper than the gates and of much less weight, and from trial they have not, in a single instance, failed in their object.

My self-coupling hooks, the spring-buffers, and strengthened platforms enable me to effect another and a very valuable improvement, to wit: compression between cars which are coupled together. To effect this, I attach the buffers *E* and coupling-hooks *D* so that the faces of the buffers project one inch (more or less) beyond the abutting faces of the hooks. Thus, when the cars come together to be coupled the buffers are forced back one inch (more or less) upon their springs before the coupling can be effected, thus making a compression which is equal to the strength of the springs. The advantages gained by thus keeping the buffer-heads in contact with each other are steadiness, freedom from jerks and shocks in starting and stopping and in running, and a great reduction in liability to accidents.

By having the buffers and the couplers arranged in the middle of the buffer-beams the ends of the cars can be brought very close together, and yet the required amount of motion allowed for turning curves.

Having thus described my invention, what

I claim as new, and desire to secure by Letters Patent, is—

1. Constructing the platforms of railroad-cars in a horizontal plane with the car-beds and sustaining such platforms by means of trussed rods, substantially in the manner described.

2. The cross-timbers a a' a^2 , applied to the two intermediate longitudinal platform-beams O O' , substantially as and for the purposes described.

3. The construction of spring-buffers and couplings, substantially as herein described, to produce compression between cars which are coupled together, so that the spring-buffers and couplings shall constantly act together to prevent shocks and jerks in starting,

stopping, or running trains, said buffers and couplings being arranged substantially as set forth.

4. Constructing the hooks D partly of cast metal and partly of wrought metal, substantially as described.

5. Chilling the abutting faces of the coupling-hooks D , substantially for the purpose described.

6. Facing the abutting surfaces of the buffer-heads with a metal which is harder than that of which the heads are formed, substantially as described.

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