8261X

R. WINANS.

Car Spring.

Patented June 14, 1834.

Fig. 1.

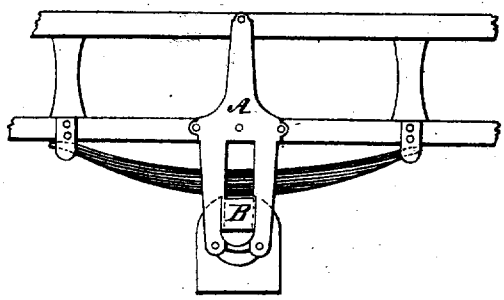


Fig. 2.

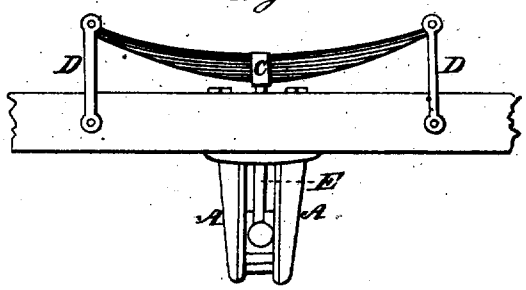


Fig. 3.

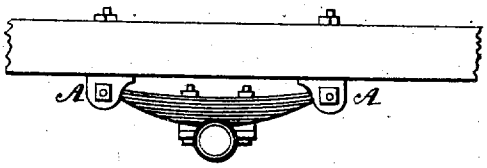


Fig. 4.

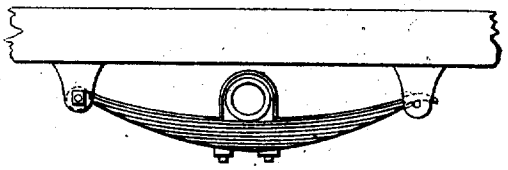


Fig. 6.

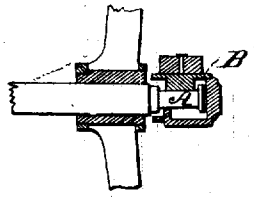
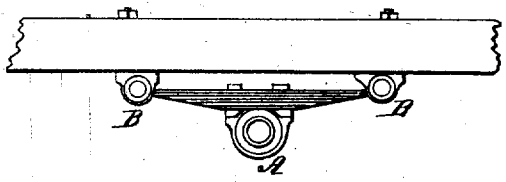


Fig. 5.



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Rogs Winans

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Letters Patent June 14. 1834. –

The Schedule referred to in these Letters Patent and making part of the same containing a description in the words of the said Rogs Winans himself of his Improvement in the mode of constructing Springs to railroad cars

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To all whom it may concern. Be it known that I Rogs Winans of the city of Baltimore in the State of Maryland. Civil Engineer have invented a new and useful improvement in the mode of constructing springs for railroad cars and that the following is a full and exact description thereof. reference being had to the accompanying drawings which make a part of this specification. The more perfectly to set forth the nature of my improvement I will first briefly describe the construction of those springs which have been most generally used for rail road cars both in this country and in England. A Fig. 1. represents a plate of cast or wrought iron which is bolted into the outside of the side rail of a car and sometimes on both sides of each side rail. a pair of such plates being occasionally used. The parallel sides of these plates serve as guides to the box B. which receives the axle and allows it to follow the motion of the spring and at the same time checks its tendency to lateral or longitudinal deviations. The spring is placed above the box in the manner shown in the drawing. it ends bearing upon plates in the under part of the side rail. these springs are generally made from 30 to 35 inches in length from 2½ to 3 inches deep in the center the plates being from 3 to 3½ inches broad. In Fig. 2. A is a cast or wrought iron frame bolted on to the lower side of the rail of the car. the box of the axle sliding in it as in the former case the spring C is placed above the rail its ends being attached to links D D. by means of bolts slipping through them and having keys formed on the ends of the springs by screwing or bending them round. A metal bolt E. extends from the upper side of the box of the axle to the lower side of the spring. These springs do not differ from the former in their general dimensions. The great expense of springs as constructed has induced the patentee to attempt plans for making them by which it was hoped the inconvenience of frequent breakages

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produced at a diminished cost. One kind of these springs is shown at fig 3. These have been usually made about 24 inches long 2 1/4 inches deep and about 2 1/4 broad scrolled or bent round at one or both ends the scrolls being attached by bolts to iron castings A A. bolted on to the under side of the side sash. When one end only is scrolled the other slides in a mortise or hook at in one of the castings, the bearing boy for the axle is bolted on to the lower side of the springs. To these springs the following practical objections exist the smaller scrolls on their ends tend to diminish their elasticity and they do not sufficiently resist the effect of lateral movement or thrust, but are liable to become loosened or deranged. That represented in fig 4. resembles the one last described as will be seen by inspection. the bearing boy however is bolted on to the upper side of the spring and is held in its place by means of an iron stirrup or strap which passes over it. this without obviating the objections to the one last named, causes the car to be hung inconveniently low. The object which I profess to have attained is the furnishing a spring which shall answer all the purposes of those first described whilst from their greater simplicity they shall be much less expensive, and be at the same time free from the objections which exist against the two latter kinds. The spring as I construct it is shown at figure 5 and and in its general appearance bears a resemblance to that of fig. 3. but differs from it in several points which I deem of essential importance, instead of using plates of the usual breadth I take them from 4 to 4 1/2 inch broad, using a a diminished number in proportion to the strength obtained from their width, instead of giving a considerable curvature to these plates lengthwise I make them very nearly straight, bending them so much only as I think necessary to allow of their being brought straight or nearly so by the load which they are to sustain. The boy A. for the axle is bolted on to the lower side of the spring as in fig 3. the bolts used being made fast to holes in the centre line of the plates serve to keep them in their places without the aid of the stirrup and straps generally employed to check the ends of such springs. Also by avoiding unnecessary thickness in the bearing boy by bring the journal of the axle as near to the lower side of the spring as can be safely done in order that in this forming the end bearings of the spring and the centre of the axle

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axle may approach as nearly as possible to a straight one by this means I almost annihilate the tendency to twist the spring by the lateral pressure of the axle the great width of the spring and its straightness also are in a very high degree instrumental in sustaining it against this pressure. I do not form a scroll or eye on either end of the spring but allow each to pass into a pocket or mortise in the metal bearings B B, usually cast iron and bolted to the inside side of the side rail of the car. These pockets need be no deeper than is necessary to admit the spring as there is scarcely any sensible difference in its length when bended or not. it therefore sustains the longitudinal thrust without play which must be the case with a curved spring. They also fit it closely in width and thickness and thus check its tendency to twist. The dimensions of these springs must vary according to circumstances but for a car intended to carry 30 tons the following I consider as in good proportion. Length 3 f inches breadth 4 inches. middle thickness 2¼ inches plates 9 in number each one fourth of an inch thick in the middle and excepting the two upper ones tapered towards their ends and diminishing in length in the usual way. The journals of the axle when my spring is used must be made with a button or knot as shown at K. fig. 6. this has been usually done when the springs shown in figs 1 & 2. have been employed and is always advantageous as it divides the lateral thrust between the two sides of the car by affording a shoulder on each side of the box B. whilst the spring which I have described as my invention is equally efficient with those shown in figs 1 & 2 and is free from the objections of those of fig. 3 & 4. they can be afforded at about one half the price of the former owing to diminished quantity of the material used in making them. but more especially to the great saving of labour in their construction from causes which will be obvious to every engineer and workman. What I claim as my invention is the general construction of the within described spring as resulting from the employment of plates of steel of much greater width than has heretofore been employed for the springs of railroad cars and from the making of these plates straight or nearly so thereby preventing any sensible alteration in their length when in action and admitting of their ends being both inserted in pockets formed in comparatively light bearing pieces

Witnesses John W. Fairbanks
J. Knight

Thos Davenport

E. & A. M.

12 Dec 1843