UNITED STATES PATENT OFFICE.

WALTER FERRIS, OF SOUTH MILWAUKEE, WISCONSIN, ASSIGNOR TO THE BUCYRUS COMPANY, OF SOUTH MILWAUKEE, WISCONSIN, A CORPORATION OF WISCONSIN.

RAILWAY-CAR TRUCK.


Application filed April 14, 1905. Serial No. 225,537.

To all whom it may concern:

Be it known that I, WALTER FERRIS, a citizen of the United States, residing at South Milwaukee, county of Milwaukee, State of Wisconsin, have invented certain new and useful Improvements in Railway-Car Trucks; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

The invention relates to railway-car trucks, and has for its object to provide a bolster-truck with a transverse truss that will take up and distribute the heavy strains of tension and compression and hold the arch-bars on opposite sides of the truck in accurate vertical position and parallel alignment and at the same time support the spring-plank and prevent the latter sagging at the middle.

The invention is particularly applicable to the trucks of railway steam-shovels, wrecking-crane, and the like, but of course, is equally well adapted to car-trucks generally which are subjected to heavy lateral or torsional strains tending to distort the arch-bars and spring-plank.

The invention is illustrated in the accompanying drawings, in which—

Figure 1 is a transverse section of a bolster-truck having the invention applied thereto. Fig. 2 is a similar view showing a modified form of the diagonal braces. Fig. 3 is a similar view showing means independent of the bolster for connecting the upper arch-bars.

Referring to Fig. 1, a indicates the truck-bolster, which supports the weight of the car and transfers this weight to the springs, the latter being supported upon the spring-plank b, which consists of the usual channel-iron which is secured at its ends to the lower arch-bars e. Between the upper arch-bars d and the lower arch-bars e are secured the usual bolster-columns i, which are rigidly secured to the upper and lower arch-bars d and e and the tie-rods f by the usual through-bolts. In trucks of this general character when used to support the car-bodies of steam-shovels, wrecking-crane, and the like, having a boom which is adapted to be swung to various positions laterally of the longitudinal axis of the car-body, severe lateral strains are imposed on the trucks, which tend to throw the arch-bars out of parallelism and also to destroy the vertical alinement of the upper and lower arch-bars, as well as to cause the spring-plank to sag at its middle, due to the excessive weight transmitted to the plank by the supporting-springs. In order to overcome the above-mentioned difficulties, the truck is converted into a truss by the interposition of diagonal braces secured to the upper ends of the bolster-columns and to the spring-plank, respectively, so as to preserve the parallelism of the arch-bars on each side of the truck and also to maintain the vertical alinement of the upper and lower arch-bars on both sides of the truck. This truss consists of upper and lower cord members and diagonal braces or stays. As the bolster itself is subject to vertical movement, due to the compression and expansion of the springs, it cannot be used as a point of attachment for the diagonal braces. If may be desired, however, to employ the bolster as the upper cord member of the truss, and to permit this the bolster is provided at its ends with upwardly-projecting lugs m and n, which closely embrace the upper arch-bars d and cause the bolster to act as an accurate distance-piece between the respective arch-bars, notwithstanding the vertical movement of the bolster. As the arch-bars are tied to the bolster-columns and also to the bolster, as far as lateral movement is concerned it will be seen that a practically perfect transverse bridge-truss will be produced by connecting the bolster-columns with the spring-plank by diagonal braces g. In this particular form of the invention the diagonal braces g are connected to lateral lugs k, projecting from the inner sides of the bolster-columns, and to the middle point of the spring-plank channel, so that as far as lateral strains of tension and compression are concerned the bolster, the arch-bars, the bolster-columns, and the spring-plank constitute a rigid truss, and any undue strain imposed upon the car-body will be equally distributed by the truss to all parts of the truck, notwithstanding the independent vertical movements of the bolster, and the spring-plank will be prevented from sagging at its middle, even under excessive loads.

The construction illustrated in Fig. 2 differs from that just described only in the mode of attaching the upper ends of the di-
agonal braces to the bolster-columns. In this form of the invention the lateral lugs or ears are omitted from the columns, and the diagonal braces $g'$ are given a quarter-turn at their middle and the upper ends thereof passed between the upper arch bars $d$ and the tops of the bolster-columns, where they are rigidly secured by the through-bolts of the columns. The lower ends of the diagonal braces are securely riveted to the spring-plank at its middle.

In the further modification of the invention illustrated in Fig. 3 the bolster $a$ is not employed as the upper cord member of the truss, and therefore it is not essential that the arch-bars $d$ be connected to the bolster by lugs, such as $m$ and $n$, which latter are omitted in this construction. The upper cord member is, however, supplied by a transverse rod or bar $p$, which is connected to the lateral lugs $k$ on the bolster-columns, to which the upper ends of the diagonal braces are secured.

In all of these constructions it is to be noted that the diagonal braces in addition to completing the truss which distributes the strains of tension and compression evenly over the truck structure serve to preserve the vertical alignment of the arch-bars on each side of the truck and prevent the arch-bars on both sides of the truck being sprung out of alignment and, furthermore, serve to support the spring-plank and prevent the latter sagging at its middle, due to the great pressure of the springs, which are located in part inside of the arch-bars.

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

1. A railway-car truck, comprising a bolster, upper and lower arch-bars, bolster-columns, a spring-plank secured to the lower arch-bars, means connecting the upper arch-bars to prevent independent lateral movement thereof, and diagonal braces attached at their ends to the upper ends of the bolster-columns and the spring-plank, respectively.

2. A railway-car truck, comprising a bolster, upper and lower arch-bars, bolster-columns, a spring-plank secured to the lower arch-bars, lugs on the bolster ends engaging the upper arch-bars to prevent independent lateral movement of said arch-bars, and diagonal braces attached at their ends to the upper ends of the bolster-columns and the spring-plank, respectively.

3. A railway-car truck, comprising a bolster, upper and lower arch-bars, bolster-columns, a spring-plank secured to the lower arch-bars, lugs on the bolster ends engaging the upper arch-bars to prevent independent lateral movement of said arch-bars, and diagonal braces attached to the top of the bolster-columns by the through-bolts and to the spring-plank, respectively.

In testimony whereof I affix my signature in presence of two witnesses.

WALTER FERRIS.

Witnesses:

Harry B. Hayden,

Ridgely Fletcher.