

UNITED STATES PATENT OFFICE

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TRUCK SPRING SUSPENSION

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The object of this invention is to improve the construction of spring suspensions for car trucks. The invention is particularly adapted for use in connection with the trucks of suburban and trolley cars.

In the accompanying drawings:

Fig. 1 is a sectional view on the line 1—1, Fig. 2, showing one-half of the bolster and frame of the car truck, illustrating my invention;

Fig. 2 is a section on the line 2—2, Fig. 1, showing an end view of the bolster and spring;

Fig. 3 is a sectional plan view on the line 3—3, Fig. 2;

Fig. 4 is a detached perspective view of the end of the bolster;

Fig. 5 is an end view of the spring block; and

Fig. 6 is a view similar to Fig. 1, illustrating a modification of the invention.

1 is one of the side frames of the car truck. 2—2 are the transoms which extend from one side of the frame of the truck to the other, and between which is the bolster 3. This bolster is in the form of a hollow box having side channel members 4, a top plate 5, and a bottom plate 6. The top and bottom plates are secured to the side members 4—4 by rivets or other fastenings. On the inner side of each transom are plates 7, which are bent to form recesses for the upper ends of the links 8, which are hung from pivot pins 9, which extend through the transoms and the plates 7, as clearly shown in Fig. 3. Suspended from the links 8 is a spring block 10. A connecting pin 11 extends through the spring block 10 and through the lower ends of the links 8, Figs. 1 and 2. Mounted on the spring block are two semi-elliptical springs 12—12, which are spaced apart a certain distance, and extending from the bottom plate 6 of the bolster is a web 13, which in the present instance is secured to the plate by welding. The springs 12 are firmly attached to the spring plate by U-shaped bolts 14, which extend over the springs and extend through the block 10, and on the lower ends of the U-shaped bolts are nuts 15. The spring block in the present instance is made hollow and con-

sists of a lower channel member 16 and a top plate 17, which is welded to the upturned flanges of the channel. The construction of this spring block may be modified without departing from the essential features of the invention.

The inner end of each spring 12 is hung from the bolster 3 by links 18, pivoted to the bolster at 19, and extending through the eye of each spring is a pin 20. The links 18 are preferably made U-shape and extend under the inner ends of the springs, so that in the event of the breaking of the pin 20, the spring would be held by the connecting portion of the links. The outer ends of the springs 12 have eyes through which extends a pin 21. The pin also passes through an extension 22 of the bolster 3. In the present instance this extension consists of a portion of the bottom plate 6 of the bolster and two angle plates 23—23. These extensions of the bolster project under the main frame 3 and beyond the frame, allowing the use of long springs. The outer ends of the angle plates 23 are riveted to the extension of the bottom plate 6 and their inner ends are secured by rivets which pass through the plate 6 and the lower flanges of the channel members 4 of the bolster 3. This construction is very substantial and firmly supports the outer ends of the springs. As the outer end of each spring is pivoted at a fixed point, the links 8 have movement when the truck is in motion, while the links 18 have movement only when the springs of the truck are in motion.

At the center of the bolster 3 is a center pin bearing 28, which may be of the ordinary construction, and near each outer end of the bolster 3 is a box-like extension 24, which carries the side bearing plates 25. The bolster has rub plates 26 at each side, which are located close to the angle plates 27, secured to the transoms 2, and bearing rub plates 29 limiting the lateral movement of the bolster.

Fig. 6 illustrates a modification of the invention, in which the inner ends of the springs 12a are secured by a pin 21a to a bracket on the underside of the bolster 3a. The outer end of each spring is suspended from the bolster by links 18a. The construc-

tion shown in Fig. 1, however, is the one preferred, as long springs can be used.

While I have illustrated a heavy duty truck having a pair of semi-elliptical springs at each side, it will be understood that in light trucks a single spring at each side may be used without departing from the essential features of the invention.

I claim:

1. The combination in a car truck, of transoms; a bolster located between the transoms; a spring block; links suspending the block from the transoms; a semi-elliptical spring located on the block under the bolster, one end of the spring being pivoted directly to the bolster; and links hung from the bolster and connected to the opposite end of the spring, so that the spring will have a rigid connection with the bolster at one end and will be free to accommodate itself to the movement of the truck through the medium of the links.

2. The combination in a car truck, of side frames; transoms connecting the side frames, said transoms being spaced apart; a bolster located between the transoms; a spring block; links connecting the spring block with the transoms; a semi-elliptical spring mounted on the spring block, said spring being directly connected to the bolster at its outer end; and links connecting the inner end of the spring with the bolster, so that the spring is free to move on the outer connection as a pivot.

3. The combination in a car truck, of side frames; transoms connecting the side frames, said transoms being spaced apart; a bolster located between the transoms; a spring block; links connecting the spring block with the transoms; two semi-elliptical springs arranged side-by-side and carried by the spring block; a pivot pin mounted on the outer end of the bolster and to which the outer ends of the springs are pivotally connected; and links pivotally suspended from the bolster and pivotally connected to the inner ends of the springs, so that the springs are free to move on the pivot pin at the outer end of the bolster.

4. The combination in a car truck, of side frames; transoms extending from one side frame to the other, said transoms being spaced apart; a bolster located between the transoms, the bolster having extensions at each end projecting under the side frames; a spring block; links connecting the spring block with the transoms, the outer ends of the springs at each side of the truck being pivotally connected directly to the extensions of the bolster; and links connecting the inner end of each spring at each side of the truck with the bolster, so that the links supporting the spring block and the links supporting the inner ends of the springs will be allowed to

move to accommodate the movement of the parts when the truck is in motion.

5. The combination in a car truck, of side frames; transoms connecting the side frames, said transoms being spaced apart; a bolster mounted between the transoms, said bolster having extensions at each end projecting under the side frames, said extensions consisting of a top plate and two angular side plates; a pivot pin extending from one angular side plate to the other; a spring block at each side of the truck; links pivotally mounted on the transoms and pivotally attached to the blocks; a pair of semi-elliptical springs mounted on each spring block, the springs of each pair being arranged comparatively close together and the outer ends of said springs being mounted on the pivot pin on the extensions of the bolster; and links connecting the inner ends of the springs with the bolster, so that the springs are free to pivot on the pivot pins when the truck is in motion.

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