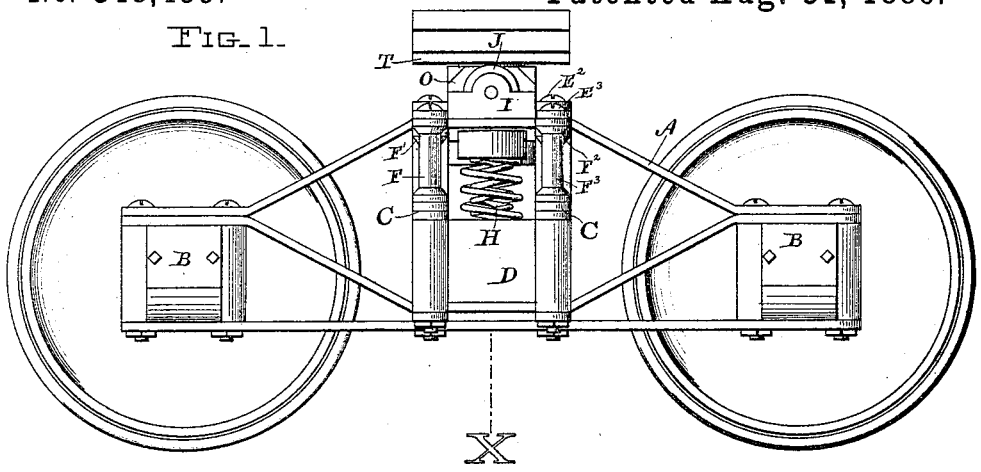
(No Model.) 3 Sheets—Sheet 1.

J. GOETTEL.

CAR TRUCK.

No. 348,459. Patented Aug. 31, 1886.

FIG. 1.



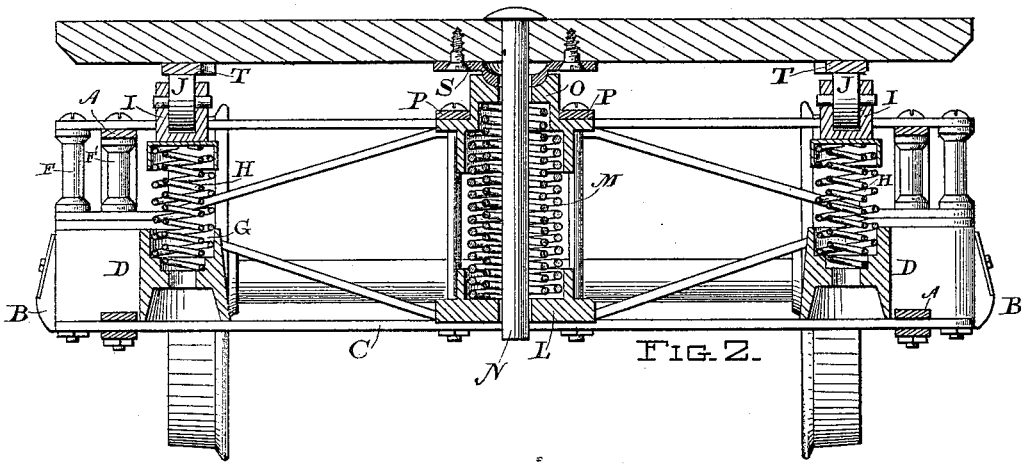


FIG. 2.

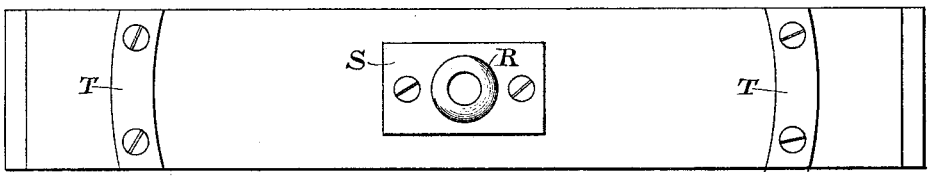


FIG. 3.

WITNESSES

T. W. Porter

Robert Ash

INVENTOR

John Goettel

per Eugene Humphrey,

his atty.

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J. GOETTEL.

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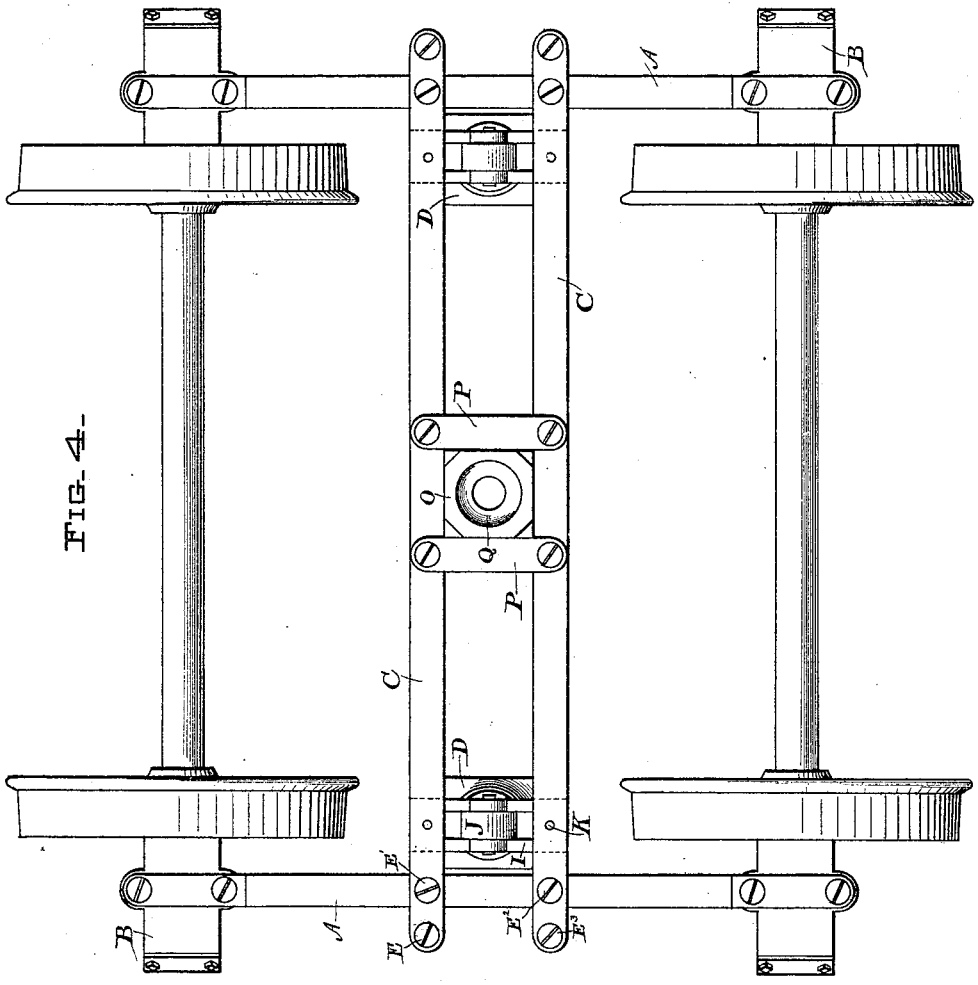

FIG. 4.

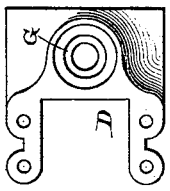

FIG. 5.

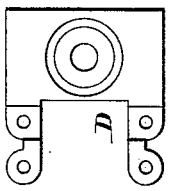

FIG. 6.

FIG. 7.

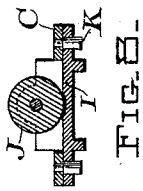

FIG. 8.

WITNESSES

J. W. Porter

Robert Ashe

INVENTOR

John Goettel

per Eugene Humphreys,

his atty.

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J. GOETTEL

CAR TRUCK.

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FIG. 9.

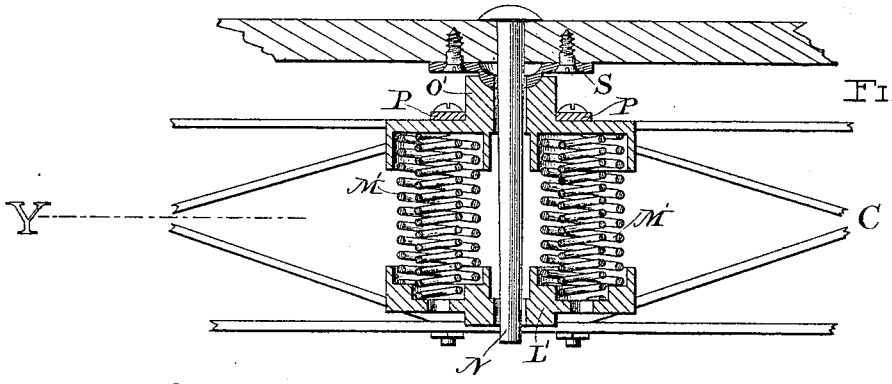


FIG. 10.

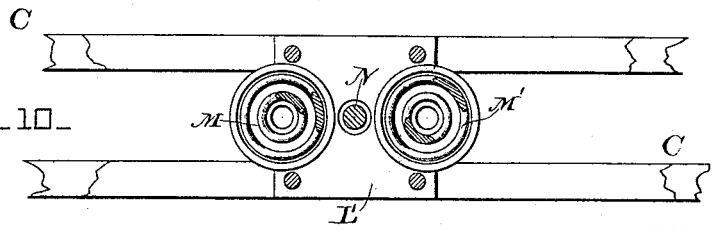


FIG. 12.

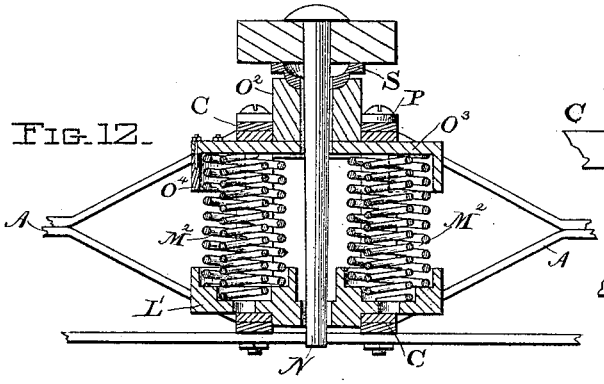


FIG. 11.

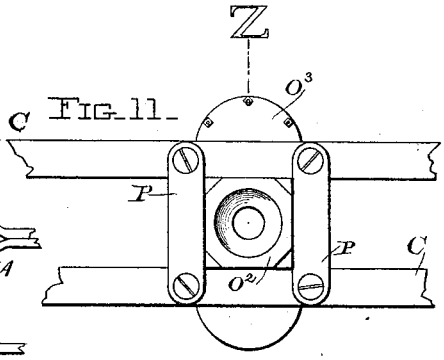


FIG. 14.

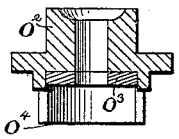


FIG. 15.

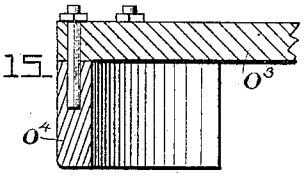
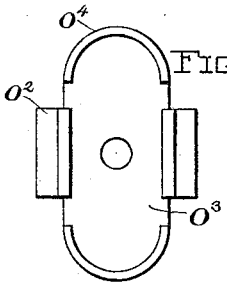


FIG. 13.



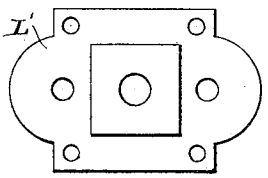


FIG. 16.

WITNESSES

T. W. Porter

Robert Ashe

INVENTOR

John Goettel

per

Eugene Z. Humphrey

his atty.

UNITED STATES PATENT OFFICE.

JOHN GOETTEL, OF BOSTON, MASSACHUSETTS.

CAR-TRUCK.

SPECIFICATION forming part of Letters Patent No. 348,459, dated August 31, 1886.

Application filed June 23, 1886. Serial No. 205,954. (No model.)

To all whom it may concern:

Be it known that I, JOHN GOETTEL, of Boston, in the county of Suffolk and State of Massachusetts, have invented a new and useful Improvement in Car-Trucks, which will, in connection with the accompanying drawings, be hereinafter fully described, and specifically defined in the appended claims; and my invention consists in the construction and combination of the divers devices embodied therein, as hereinafter more particularly and fully set forth and claimed.

In the accompanying drawings, Figure 1 is a side elevation of a car-truck embodying my invention, and shows in end elevation the cross-trusses and one of the truss-blocks by which they are connected with the side or axle-box trusses, and which blocks furnish seats or supports for the side springs, upon which the car bears, as hereinafter described. Fig. 2 is a central vertical cross-section, taken, as on line X, Fig. 1, through the car-springs. Fig. 3 is an under side view of the bolster and its attachments, upon which the car is supported and through which it is connected with the truck. Fig. 4 is a top view or plan of my improved truck. Fig. 5 is a detached plan of the truss-block which is employed to unite the cross-trusses with the side trusses and to support the side springs. Fig. 6 is an under side view of the same. Fig. 7 is a side elevation of the same. Fig. 8 is a central cross-section through one of the side-spring caps, its roll, the upper bars of the cross-trusses, and the steady-pins or guides of the cap. Fig. 9 is a modification of the center support, in which two springs are employed, arranged laterally, one to the right and one to the left of the king-bolt. Fig. 10 is a horizontal section taken as on line Y, Fig. 9, showing a plan of the base-plate employed to uphold the pair of central springs. Fig. 11 is a plan showing a different arrangement of the center-support springs, in which they stand in a line at right angles to that which would pass through their centers in Fig. 9, one being in front and the other back of the king-bolt, and also showing a modification of the cap to adapt it to this last arrangement. Fig. 12 is a vertical section taken as on line Z, Fig. 11, and as viewed from the left of said line. Fig. 13 is an under side view of the depressing-cap employed when the center-support springs are arranged as in Fig. 11, said cap being constructed with detachable parts for the purposes hereinafter described. Fig. 14 is a central cross-section of the cap shown in Fig. 13, but with the cap right side up. Fig. 15 is an enlarged vertical section through the detachable rim on one end of said cap, and showing the manner of securing the rim to the body of the cap, the section being taken as on line Z, Fig. 11. Fig. 16 is a plan of the under side of the base-plate, which rests upon and between the lower bars of the cross-trusses and supports the central spring or springs.

In my improved truck I employ the well-known side or axle-box trusses, A A, which support the axle-boxes B B, and in place of the usual solid and bulky cross-beams employed for connecting the side trusses and furnishing the car-supports, I employ two light and open but strong metallic trusses, C C, which are united at their ends and connected with the side trusses, A A, by means of metallic truss-blocks D D, of cast metal. These blocks are formed as shown in Fig. 5, 6, and 7, and rest, one upon each side of the truck, upon the bottom bars of the side and cross trusses, and are secured thereto and to the upper bars of said trusses by means of bolts E E' E^2 E^3, as shown in Figs. 1, 2, 4, passing through the bars of the trusses and the truss-block, and secured by nuts threaded on the lower ends thereof, as shown.

To avoid unnecessary weight and at the same time to secure comeliness of design and the requisite strength, I employ upon each of the truss-blocks four pillars, F F' F^2 F^3, of cast metal, and of ornamental exterior design and hollow interior, and extending from the lower bars of the trusses resting upon said blocks to the upper bars, which rest upon the pillars, and through all of which the bolts E extend and secure the same, as shown. Each of the blocks D has formed in its base a circular recess, G, of unequal depth and diameter, to receive the lower ends of the coils forming the side spring, H, and constituting the seat and support of said double spring. The bottom of said recess is centrally bored through, as shown, to allow any dirt or dust which may accumulate therein to pass readily down through, without clogging or interfering in

any way with the proper action of the spring. The springs H are each capped with a vertically-sliding depressing-block, I, upon which is formed or mounted upright bearings, in which rolls J turn, as shown in Figs. 1 and 2, and for a purpose hereinafter explained. The vertical movement of caps I is steadied and guided by pins K, secured in the upper bars of the cross-trusses, (see Figs. 4 and 8,) and projecting therefrom downward through corresponding holes in the flanges of the caps, (see Fig. 8,) and to such an extent as the cap is liable to be depressed.

In my improved truck the chief support of the car is a central spring-support consisting of a bed-plate, L, which rests upon the lower bars of the cross-trusses C C and projects slightly downward between the same, so as to shoulder, laterally, against the edges of said bars. Upon its upper side the block or plate L is formed with a raised cylindrical rim, within which is seated and supported the spring M, composed of two spiral coils, one within the other, as shown. Plate L is secured to the cross-trusses by four bolts, which pass through the upper bars of the trusses C C and through the connecting cross-bars P, thence downward through the overlying sides or corners of plate L and the lower bars of the trusses upon which the plate rests, as shown in Figs. 2 and 4, and are firmly secured by nuts threaded upon the lower ends of the bolts and turned against the under sides of the lower bars of the trusses, as shown. Upon spring M a depressing cap, O, is mounted, and is formed to inclose the upper ends of the coils composing the spring, and is arranged to move vertically between and to be guided by the upper bars of the trusses C C and the cross-bars P P, above which the upper portion of the cap projects, and between the sides of which it is fitted to slide up and down, as shown in Figs. 2 and 4. The upper portion of this cap has a central depression or concavity, Q, formed therein, and it and the base L are centrally bored through to receive loosely the king-bolt N, which passes down through the bolster and its plate S and through cap O and plate L, having a free play therein, as shown in Fig. 2. The bolster-plate S has a central semi-spherical or convex projection, R, corresponding to said depression Q, in which it is seated when the parts are in proper working relation to each other, as shown in Fig. 2. The center support just described constitutes the chief seat of the car upon the truck, and facilitates the lateral rocking thereof to the necessary extent and the turning of the car about the axis of such support in following the curves of the track, and the rolls J, mounted upon the caps of the side springs, H, also facilitate such turning of the car, when the bolster, by being rocked or depressed to that extent, is brought into contact therewith by reducing the friction of such contact. Metallic wearing-plates T are secured to the under side of the bolster, near its ends, as shown in Fig. 3, and are usually suspended by the uplifting force of the center springs above the rolls J, but come into contact with them whenever the car is rocked or depressed to that extent. The connecting-pin or king-bolt is formed with the usual head upon one end, and when in use passes downward through the bolster and its plate S, thence through cap O, spring M, and plate L, and projects below the latter sufficiently to be secured in place by a nut threaded on the lower end thereof or by a pin through the same, as may be preferred. The bolt should be loosely fitted in the parts through which it passes, and, if preferred, may be tapered, to allow it sufficient freedom of movement when the car rocks.

The modifications shown in Figs. 9 to 16, inclusive, relate to the central support, and consist in changes of construction by which two upholding central springs may be employed under the lateral arrangement shown in Figs. 9 and 10, or the longitudinal arrangement shown in Figs. 11 and 12. Plate L′ rests upon the under bars of cross-trusses C C in the same manner as plate L, which has been described, but is constructed with two circular rims to receive and support two springs, as shown in Fig. 10, the hole for the king-bolt N being centrally between the two rims. The boss upon the under side of this plate is square, as shown in Fig. 16, and the body through which the securing-bolts pass is also square. Thus the plate is adapted to rest upon and between the bars of the cross-trusses either in the position shown in Fig. 10 or at right angles to that position, as shown in Fig. 11. The cap O′, employed to hold and depress the upper ends of the springs M′ when arranged as in Fig. 9, is substantially the same in construction as cap O, except that it is extended laterally and provided with two rims to inclose the upper ends of two springs instead of one, as in the case of cap O; but it is held in place upon the springs and is guided in its vertical movements between the bars P and the upper bars of the cross-trusses C in precisely the same manner as cap O is held and guided; but when plate L′ is turned so as to bring the springs into the longitudinal position shown in Fig. 12, the cap is constructed of detachable parts in order to get it into its working position upon the top of the springs, as the springs stand between the upper and under bars of the trusses C C.

To enable the cap O^2 to be placed in position upon the springs, as shown in Fig. 12, the part O^2 (see Figs. 13 and 14) is detachable from part O^3, it being constructed with two ribs upon its under side, which fit into corresponding notches in the sides of body O^3, as shown in Fig. 13, and the rims upon the under side of the body O^3, formed to receive and hold the tops of the springs, are semicircular instead of circular, as in cap O′. Rim O^4 is detachable, being secured to body O^3 by means of bolts fixed at one end in the rim, while the other ends pass through O^3, and are secured by nuts on the

bolts, as shown in Figs. 11, 12, and 15. When the central springs are in position upon plate L′, to place the cap upon them I remove rim O^4 and cap O^2 and then slide the end of body O^3, from which rim O^4 is removed, under the upper bars of the cross-trusses and over the tops of the springs, and when the springs are in right relation to the body of the cap I replace the rim O^4, securing it to the body O^3 by bolts, as shown, and I then remove two of the bolts which secure the bars P P, so as to allow of their being swung to one side to allow part O^2 to be placed in position on O^3 with the ribs on O^2 in the side notches in O^3, when, by replacing the bars with the flanges of O^2 beneath them and secured by the bolts, it is ready for practical operation, and is held, guided, and operates upon the springs practically the same as if made in one piece like cap O′. By thus constructing the truck with open diamond cross-trusses connecting the side trusses I secure the requisite strength without undue weight and free passage of the air through the same, thus economizing propelling power, as there is much less atmospheric resistance to this truck when it is moved swiftly along the track, and by arranging a center spring-support in the cross-trusses, as described, and with the lateral support of the side springs, I obtain an unusually elastic and easy motion of the car.

I claim—

1. The cross-trusses C C, secured to side trusses, A A, as described, and carrying a central elastic car-support, substantially as specified.

2. The combination of side trusses, A A, and cross-trusses C C, secured together by blocks D D, bolted to the trusses, substantially as specified.

3. The side trusses, A A, cross-trusses C C, truss-blocks D D, springs H, seated in blocks D, caps I, carrying rolls J, all constructed and arranged to operate together substantially as and for the purposes specified.

4. The combination, with the side trusses, A A, of the cross-trusses C C, secured to the said side trusses, the plate L, shouldered between the said cross-trusses and bolted thereto, the spring M, seated in said plate, the depressing-cap O, and the pin N, extending through the said cap, spring, and plate, substantially as set forth.

5. The combination of the cross-trusses C C, block L, bolted to said trusses, spring M, seated in the block, depressing-cap O, constructed and arranged to cover the top of spring M and to slide vertically between the upper bars of trusses C C and the cross-bars P P, all substantially as specified.

6. The combination, with the side trusses, A A, of the cross-trusses C C, plate L, bolted thereto, spring M, seated upon the block, depressing-cap O, constructed and arranged to slide vertically between the upper bars of the trusses C C and having formed in the upper face thereof a semi-spherical depression or concavity, Q, bolster-plate S, secured to the bolster and formed or provided with a convex projection, R, corresponding to concavity Q and adapted to fit and work therein, and a locking pin or bolt, N, extending downward centrally through the bolster, cap, spring, and plate, and having freedom of lateral movement therein, all substantially as and for the purposes specified.

JOHN GOETTEL.

Witnesses:
EUGENE HUMPHREY,
T. W. PORTER.