

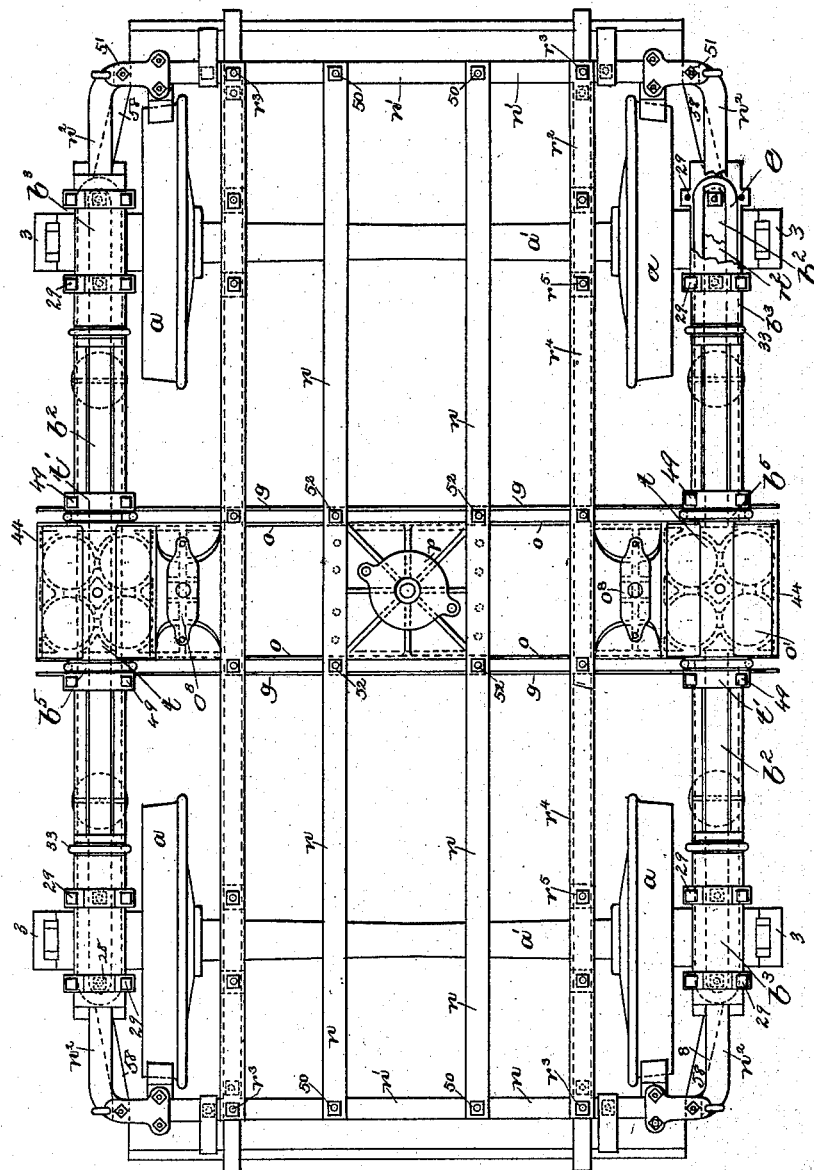
L. K. JEWETT.

CAR TRUCK.

No. 384,981.

Patented June 26, 1888.

Fig. 1.



Witnesses.
Fred L. Emery.
John F. C. Brinsford

Inventor.
Luther K. Jewett.
By Crosby & Gregory attys.

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Fig. 2.

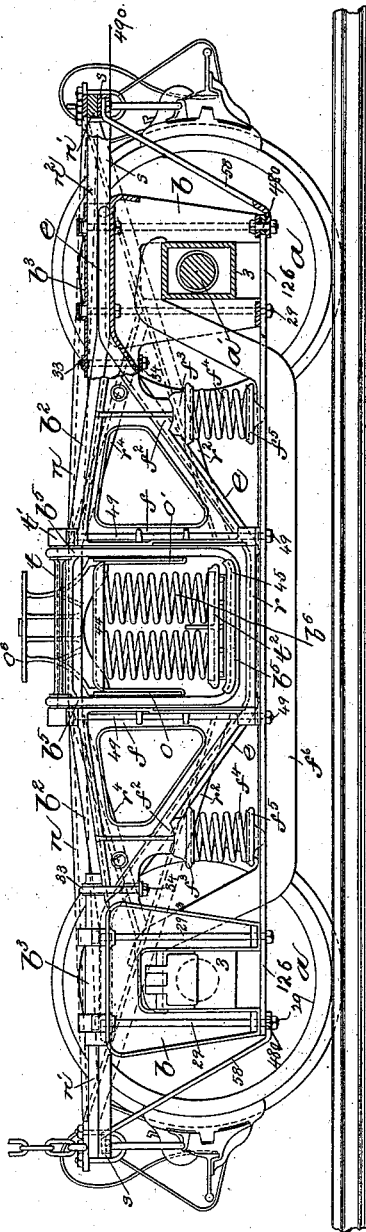


Fig. 3.

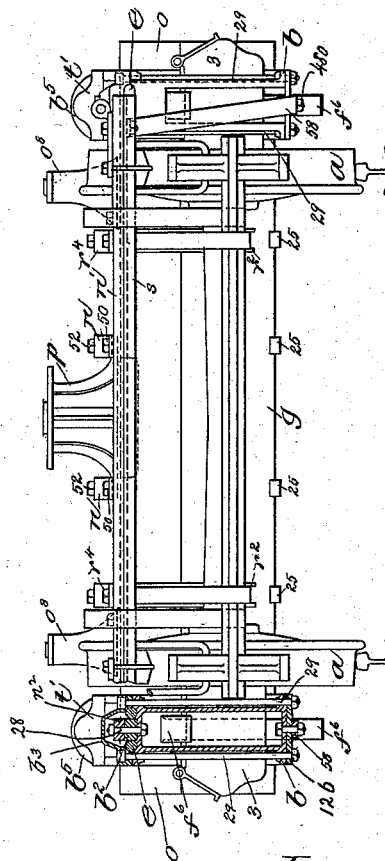
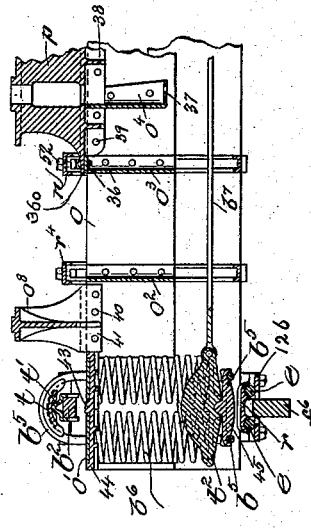


Fig. 4.



3 Sheets—Sheet 3.

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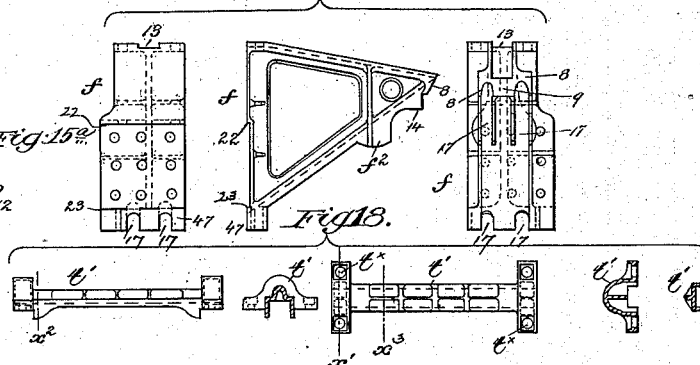
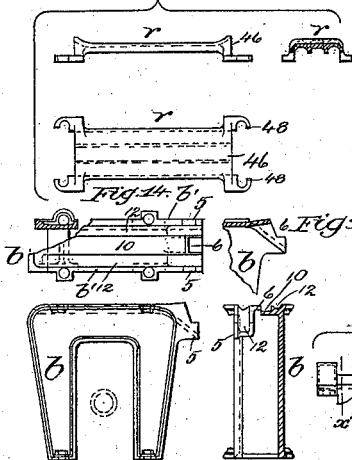
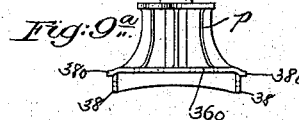
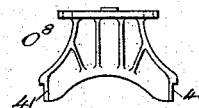
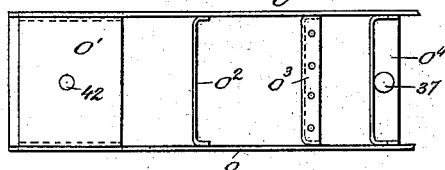
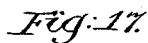
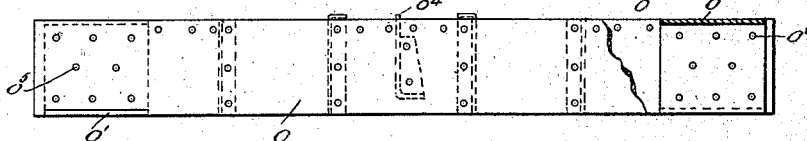
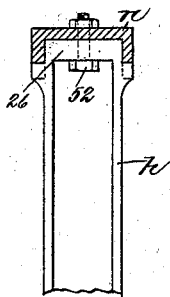
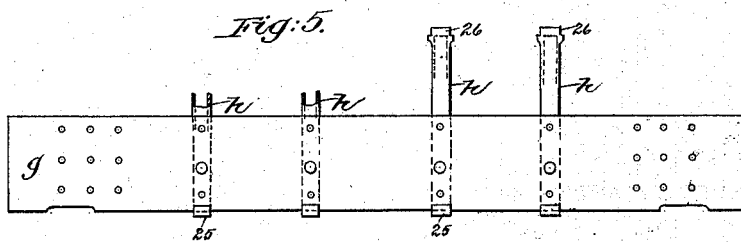


Fig. 13. Fig. 15.
Witnesses.
Howard F. Eaton.
John F. C. Prinkert

Inventor.
Luther K. Jewett.
by Henry Gregory attys.

UNITED STATES PATENT OFFICE.

LUTHER K. JEWETT, OF BOSTON, MASSACHUSETTS.

CAR-TRUCK.

SPECIFICATION forming part of Letters Patent No. 384,981, dated June 26, 1888.

Application filed April 29, 1887. Serial No. 236,551. (No model.)

To all whom it may concern:

Be it known that I, LUTHER K. JEWETT, of Boston, county of Suffolk, and State of Massachusetts, have invented an Improvement in Car-Trucks, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

This invention has for its object the production of very strong and durable yet light trucks for railway-cars, more especially passenger-cars, wherein great strength accompanied by light weight is a great desideratum.

In this my invention the entire truck is composed of metal, preferably steel and malleable iron or "Mites metal."

This invention is an improvement on that described in United States Patent No. 361,846, dated April 26, 1887.

Herein, instead of a U shaped or trough-like transom and bolster, I employ plates of metal tied together by braces, preferably of flanged or channel iron or castings, thus making a lighter weight but equally strong bolster and transom. Herein the equalizer is extended below the transom and below all the other parts of the truck except the wheels and in line with the arch-bars and wheel-bearings. The equalizer-springs are shown as so constructed and located as to co operate with and aid in supporting the arch-bar-sustaining blocks made substantially triangular and interposed between the transom, the arch-bars, and the truss-link, the latter being preferably made as a loop, the ends of which are fixed above the pedestals, while the said truss between its ends is extended under the transom and preferably through grooves or channels of a transom seat forming part of or connected to the transom. The arch-bar-sustaining blocks are riveted to the side plates of the transom and are grooved for the reception of both the arch-bar and the truss. The end pieces of the frame are engaged by lower channel-bars, which extend to or under and are connected to the transom, while other channel-bars constituting frame-braces co-operate with transom-braces attached to or forming part of and extended above the bolster, the said upper and lower channel-bars stiffening the frame and transom at frequent intervals throughout its length. The portions of the transom-braces

from which extend the arms to which the transom-plates are riveted or bolted constitute the bottom of the transom, which is open, making all the parts as light as possible consistent with strength.

Figure 1 in plan view shows a truck embodying my invention. Fig. 2 is a side elevation thereof, partially broken out; Fig. 3, an end view with the left-hand end partly broken away; Fig. 4, a partial longitudinal section taken through the bolster and transom and some of their attached parts. Fig. 5 is a detail showing part of the transom; Fig. 6, a side elevation, partially broken out, of one of the transom-braces; Fig. 7, a side elevation, partially broken out, of the bolster; Fig. 8, a top view of one end of the bolster. Fig. 9 shows a curve-plate in elevation; Fig. 9^a, an end elevation of the center plate; Fig. 10, a side elevation of a part of one of the upper channel-bars or frame-braces to tie the end pieces of the truck-frame to the transom-braces. Fig. 11 shows the transom-seat in side elevation, plan view, and section. Fig. 12 shows in end and side views one of the arch-bar-sustaining blocks. Fig. 13 shows a pedestal in side elevation; Fig. 14, a top view, partially broken out, of Fig. 13; Figs. 15 and 15^a, a partial end elevation and longitudinal section of Fig. 13. Fig. 16 shows an enlarged detail in vertical section of the top of one of the transom-braces and connected frame-brace bolted to it; Fig. 17, a detail of one end of an arch-bar, to better show the lip for holding down the truss. Fig. 18 shows different views and sections in the line x' , x^2 , and x^3 of the saddle for the rocker-bar.

The wheels a , axles a' , and housings 3 for the axles are all as usual in passenger-trucks. The pedestal b , within which the housings slide, have at their upper ends, at each side, (see Figs. 14 and 15,) flanges b' , between which is a groove, 10, for the reception of the arch-bar b^2 , and two grooves, 12 12, for the truss e , preferably of loop shape, the said arch-bar and truss being substantially the same as in the said patent, the ends of the arch-bars being preferably curved to serve as abutments for the inner portions of the loops of the said truss, as shown in Fig. 1, by breaking out one of the pedestal-caps b^3 . The arch-bar and truss-loop take the place above the

pedestal of the usual wooden side beam or plate. The pedestal at its inner upper corner has projecting shouldered ears 5 5 and abutment 6. The grooves 12 receive the truss *e* and support it where it is bent down to pass under the arch-bar-sustaining blocks *f*, which in many particulars are the same as the like blocks in the patent referred to. The ears 5 receive against them the webs 8 of the block *f*, while the abutment 6 receives against it the shoulder 9 of the block *f*. The abutment 6 is upwardly inclined at the end of the groove 10, (see Fig. 15^a), and the block *f* has a groove, 13, coinciding with it for the reception of the arch-bar *b*². The shoulder 14 of the block *f* rests in the abutment 6 of the pedestal, thus making the pedestal aid in supporting the block *f* at one end. The block *f* is grooved at its under side, as at 17 17, for the truss *e* and the inner end of the block, it having a broad flange, as shown in Fig. 12, and is riveted to a metallic transom-plate, *g*, (see Fig. 5,) I employing two such plates extended across the truck parallel one with the other. Each block *f* has a foot, *f*², which, as shown, is convexed to rest in a metallic seat, *f*³, supported upon the top of an equalizer spring, *f*⁴, the said spring in turn resting on a seat, *f*⁵, supported by the equalizer *f*⁶, the said equalizer being supported at its opposite ends upon the housings and extending below the transom, (to be described,) the said equalizer being below all the parts of the truck, except the wheels.

Should a wheel break or the truck settle, the equalizer will descend upon the ties and slide over them in the manner of a sled, and this without the ends of the equalizer being drawn out of the space between the top of the housings and the upper portions of the pedestals.

The blocks *f* are grooved across their inner ends to leave shoulders 22 23, between which enter the transom-plates *g*, the said shoulders acting to relieve the strain on the rivets used to unite the transom-plates with the said blocks *f*.

The metallic transom-plates *g*, of any suitable or desired width, are riveted or attached at intervals from end to end to transom-braces *h* *h*, made of either wrought or cast metal, flanged or channeled, as shown best in Figs. 5 and 6, the said braces being preferably provided at the outer sides with notched ears 25 to receive the transom-plates *g*. These transom-braces *h*, forming three sides of a quadrangular figure, have their arms extended upwardly, preferably to a point above the bolster *m*, where they are provided with webs 26 (see Fig. 16) to enter the channels of the upper longitudinal frame-braces, *n*, which are bolted to the end pieces, *n'*, by bolts 50, the said braces *n* extended from one to the other end piece, *n'*, of the truck, being secured to the upper ends of the transom-braces *h* by bolts 52 passed through the said frame-braces and the web 26, closing the upper ends of the transom-braces, the lower part, *h*⁶, of each transom-brace between its upright arms con-

stituting the bottom of the transom. The end pieces, *n'*, herein shown are bent nearly at a right angle (see Fig. 1) near each end to form parts *n*², which are laid upon and overlap the arch-bars and which are extended under the pedestal-caps *b*³, the said portions *n*² being joined to the tops of the pedestals *b* by bolts 28, extended through them and the said arch-bar, as best shown in Fig. 3.

The pedestal caps *b*³ are secured by bolts 29 to the pedestals *b*, and the strap or tie-bar 126 is also secured to said pedestal by said bolts. The pedestal-caps extend across the heads of the bolts 28, thus preventing them from rising. The inner end of the pedestal cap is extended sufficiently beyond the pedestal (see Fig. 2) to cover the upper corner of the block *f* and also embrace the arch-bar lying in a groove at the upper side of the block *f*. The pedestal-cap (see Fig. 3) also bears on the truss *e* to hold it, so that it cannot by any strain rise above the arch-bar, the lip 32 (see Fig. 17) of the arch-bar also aiding in holding the truss down. The pedestal cap near its inner end has a transverse groove, in which bears a loop, 33, which embraces the cap *b*³, the block *f*, arch-bar *b*², truss *e*, and the ears 5 of the pedestal, the clip 34, through which the legs of the loop are passed to receive nuts, resting against the said pedestals at 5. (See Fig. 2.)

The bolster is composed of metal plates *o*, preferably steel, attached together at intervals by angle-plates or braces, as *o'* *o'* *o*³, the bolster at its center having a flanged bolt-guide or brace, *o*⁴. The braces *o'* have their lips extended down between the plates *o*, where they are riveted to the plates *o* by rivets *o*⁵, the ends of the said braces being turned outwardly (see Fig. 7) to enter notches at the lower edge of the plates *o* *o*, such construction avoiding shearing strain on the rivets *o*⁵. The braces *o*² have their lips extended in the direction of the length of the bolster. The braces *o*³, besides having lips like those of the brace *o*², have also lips at their tops which are bent toward each other to form seats for the center plate, *p*, the end flanges, 360, of which center plate are riveted or bolted to the braces *o*³, as at 36. The bolster at the center of its length has the brace *o*⁴ flanged at three of its edges, so as to be riveted to the plate *o* and to form a horizontal flange near the lower side of the bolster, which is provided with a hole, 37, for the usual king-bolt.

The center plate, *p*, made preferably of the strongest kind of metal casting, has depending flanges 38, which extend below the tops of the plates *o*, and are riveted thereto at 39, and are provided with shoulders 380, which rest on the top edges of plates *o*. In this way the center plate is made as a brace for the bolster.

The bolster-plates *o* have riveted to them at their upper edges by rivets 40, between the braces *o'* and *o*², the flanged feet 41 of the metallic curve-plates *o*⁸, the curve-plates being strengthened by deep ribs or flanges. The brace *o'* has a hole, 42, to receive a lug, 43, of

the spring-cap 44, preferably flanged, as shown by Fig. 4, to embrace the sides of the brace o' .

Each arch-bar between the arch-bar-sustaining blocks f and above the bolster is surmounted by a saddle, t' , (shown separately in Fig. 18,) on which is placed a segmental rocker, t , shorter than the said saddle, over which is passed a double depending loop, b^5 , common to the said patent, the said loop serving to sustain the sills 45, the rocker t being free to rock on the said saddle.

Each saddle t' (shown best in Fig. 18) consists, essentially, of an arched bar having depending side flanges or lips, which embrace the arch-bar, as shown in the section, Figs. 4 and 18, the upper side of the saddle being narrow or having a rib or fin on which the rocker t is free to rock when the bolster swings. The saddle at each end has two laterally-extended ears, t^x , to receive the bolts 49.

The truck shown and described is so constructed and combined that each part is thoroughly braced, and the load of the car-body applied to the bolster and through the springs b^6 to the spring-seats is, by the links b^5 , transferred to the rockers, saddles, and arch-bar b^2 , the latter in turn being sustained by the blocks f , and pedestals in turn sustained by the truss. The equalizer-springs permit the equalizer to rise and fall as the wheels a run on uneven parts of the track without jarring the car, the top of the equalizer being normally located at a little distance below the transom seats r . The sills 45 support the spring seat t^2 , on which rest the springs b , which support the bolster. The springs are herein shown as of the spiral form.

The bolster carrying the weight of the car-body and its load is free to rise and fall within the transom, the latter braced and supported, as described, guiding the bolster.

The spring seats t^2 at opposite sides the car are connected by a link, b^7 , common to United States Patent No. 361,846, in order that the bolster may swing longitudinally or crosswise the truck.

The inner ends of the blocks f , near and below the transom-plates, are provided with transom-seats r , (shown separately in Fig. 11,) the said transom seats having shoulders, as 46, to abut against the shoulders 47 of the blocks f , the said seats also having slotted ears 48 to embrace the bolts 49, which pass through the holes t^x in the ends of the saddle t' , through other holes in flanges and ears of the blocks f , and thence through the pedestal-straps 126, where they have nuts screwed upon them. The transom seats rest on the truss e and are grooved to straddle the said truss, the truss in turn lying upon the pedestal-strap 126. The end pieces, n' , just inside the wheels, have bolts to them at r^3 longitudinal braces r^2 , of angle-iron, the said braces being extended to the sides of the transom-plates; where they are bolted together. Other angle-iron braces, r^4 , extended across the top of the transom and bolster and attached to or braced by the upper

ends of the brace h , are bolted to the braces r^2 by bolts r^5 , such construction affording numerous strong, stiff, and light-weight braces for the transom.

The lower end of each pedestal-brace 58, connected to the pedestal by a bolt, 480, and connected at its upper end to the angle-iron auxiliary end piece, s , by a bolt, as 490, is extended diagonally from the pedestal toward the center of the truck, (see Figs. 1, 2, and 3,) the said braces 58 acting to greatly stiffen the end pieces and prevent any longitudinal movement or end strain thereon.

Each end piece n' has secured to its under side by bolts 50, 51, and r^3 the auxiliary end piece, s , made as a channel-bar, the inner bent end of which abuts against the end of the truss e within or under the pedestal-cap.

Herein it will be noticed that the springs to support the bolster are located outside of rather than in line with the wheels, as in ordinary passenger-trucks employing an equalizer, and it will also be noticed that the springs supporting the bolster are located above the equalizer, so that all the weight of the car is thrown outside the wheels in the line of the journal-bearings and vertically in the line of the arch-bar and truss, so that the utmost strength and stiffness is insured, all side and twisting strains are obviated, the supports for the car are separated farther apart, thus increasing steadiness of running and reducing rocking motion and liability of upsetting.

In passenger-trucks having swing-bolsters as now made the springs for supporting the bolster are mounted upon swing-planks suspended from rigid wooden transoms crossing the top of the car-truck and mortised into so-called "outside" and "inside" wheel-piece plates.

In cars of the class last referred to the entire weight of the car-body and its contents is carried by the links referred to or to "swing-hangers," and if one of the swing-hangers or one of the bolts connecting it to the swing-plank or the swing-plank itself should break, the springs have nothing to support them and the bolster above them, and the springs fall to the track and the bolster falls with it, letting the car-body drop on the rigid frame. Derailing and loss of life is not unfrequent by the dropping of the swing-plank.

In this my invention the entire weight of the car-body is applied to the bolster and through the springs to the links b^5 , supported by the arch-bars; but should the link b^5 break, an accident will be avoided, for the spring-seats will drop only into the transom, a part of which is located below the spring-seats, the latter being directly above not only the truss e , but also above the pedestal-straps and equalizer.

I claim—

1. In a car-truck, a transom and end pieces composed of metal plates and transom-braces h , extended upward above the bolster, combined with longitudinal braces between the

said end pieces and transom-braces, substantially as described.

2. The metallic side plates of the transom, combined with metallic angle or channel iron braces having arms extended from a bottom bar, the side plates being riveted or attached to the arms of the said braces, the bottom bars forming the bottom of the transom, substantially as described.

3. The -shaped or bifurcated transom-braces having ears 25, combined with transom-plates the edges of which engage the said ears, substantially as described.

4. The metallic transom-plates and the metallic flanged or channeled transom braces to which the said plates are attached, combined with the arch-bar-sustaining blocks riveted or bolted to the outer sides of the transom-plates, substantially as described.

5. The arch-bar-sustaining blocks recessed at their inner ends to form shoulders 22 and 23 for the reception of the transom-plates, combined with the said transom-plates, substantially as described.

6. The transom-plates, transom-braces to which they are attached, and the arch-bar-sustaining blocks attached to the transom-plates *g g* and having shoulders 47, combined with the shouldered transom-seats *r*, placed between the said blocks, substantially as described.

7. The metallic bolster-plates *o*, combined with end braces *o'*, to which they are riveted, the edge of the plate and ends of the brace engaging each other, as described, to prevent shearing strain on the rivets uniting the said parts, substantially as described.

8. The bolster-plates and braces *o'* near each end, combined with intermediate flanged braces to sustain the said plates between their ends, substantially as described.

9. The bolster-plates *o* and braces *o'* and flanged braces *o''*, combined with the center plate riveted or bolted to the said braces *o''*, substantially as described.

10. The plates *o* and braces *o'*, combined with the center plate provided with shoulders 380 and flanges 38, to rest upon and overlap the bolster-plates, the lower end of the said center plate being riveted or bolted to the said bolster-plates, substantially as described.

11. The bolster-plates *o*, the braces *o'*, and the center plate, combined with the king-pin plate *o'*, located directly under the center plate and provided with a hole for the king-pin, all the said parts being riveted together, substantially as described.

12. The wheels, axles, housings, the equalizers supported by the housings, the transom, arch-bars, truss *e*, and equalizer-springs, combined with the arch-bar-sustaining blocks attached to the transom and having a foot to rest upon the seat of the top of the equalizer-spring, substantially as described.

13. The bolster-plates *o* and braces to which they are riveted, combined with the center plate, and the curved plates having depending vertical flanges fitted between the bolster-

plates and riveted thereto, and also having horizontal shoulders resting upon the upper edges of the bolster-plates, substantially as described.

14. In combination, a transom composed of metal plates and channel-iron transom-braces to which the said plates are attached, the braces being extended above the upper edges of the transom-plates, and a bolster composed of metal plates *o* and braces *o'*, and intermediate flanged braces or center plate attached to the bolster, pedestals, arch-bars extended from one to the other pedestal, trusses extended from one to the other pedestal, a rocker, loops *b'*, suspended from the rocker, spring-seats supported by the said loops, and springs mounted on the spring-seats, substantially as described.

15. The pedestals provided at their upper ends with grooves, combined with arch-bars and the trusses *e*, both secured to the pedestals, substantially as described.

16. The pedestals having grooves 10 and 12 at their upper sides, combined with the arch-bars and trusses *e*, placed in the said grooves and connected to the said pedestals, substantially as described.

17. The pedestals and the arch-bars, and trusses *e*, attached to the said pedestals, combined with the pedestal-caps and pedestal-straps bolted together, substantially as described.

18. The pedestals and the arch-bars, and trusses *e*, attached to the said pedestals, combined with the pedestal-caps, the end pieces, *n'*, extended between the said arch-bars and pedestal-caps, and with bolts to unite the said parts, substantially as described.

19. The pedestals and the arch-bars, and trusses *e*, attached to the said pedestals, combined with the said pedestal-caps, the end pieces, *n'*, extended between the arch-bars and the pedestal-caps, and with the auxiliary flanged end pieces, *s*, and bolts to unite the said parts together, substantially as described.

20. In a car-truck, a metallic transom, pedestals, and arch-bars, and trusses *e*, connected to the upper ends of the pedestals, combined with arch-bar-sustaining blocks connected to the transom and provided with ears to rest upon shoulders of the pedestals, the pedestals supporting the outer ends of the said blocks, substantially as described.

21. In a car-truck, a metallic transom, pedestals, and arch-bars, and trusses *e*, connected to the upper ends of the pedestals, combined with arch-bar-sustaining blocks connected to the transom and provided with ears to rest upon shoulders of the pedestals, the pedestals supporting the outer ends of the said blocks, and with pedestal-caps to overlap or engage the outer ends of the said blocks and keep them seated on the pedestals, substantially as described.

22. In a car-truck, a metallic transom, pedestals, and arch-bars, and trusses *e*, connected to the upper ends of the pedestals, combined with arch-bar-sustaining blocks connected to the transom and provided with ears to rest

upon shoulders of the pedestals, the pedestals supporting the outer ends of the said blocks, pedestal-caps to engage and retain the blocks *f*, seated on the pedestals, and with a bolt, as 5 33, to hold together the pedestals, pedestal-caps, blocks *f*, arch-bars, and trusses *e*, substantially as described.

23. The metallic transom, arch-bar, the arch-bar-sustaining blocks connected thereto, and 10 the truss *e*, combined with the pedestals having grooves 7 and downwardly-inclined lips at their inner sides to support the trusses where they pass from the horizontal top surface of the pedestals to the underside of the arch-bar- 15 sustaining blocks, substantially as described.

24. In a car-truck, the transom and the arch-bars, combined with pedestals, each having a groove at its upper side for the reception of the arch-bar, substantially as described.

25. The arch-bars, the saddle provided with flanges to embrace it and having ears provided with bolt-holes, the metallic transom, its connected arch-bar-sustaining blocks, trusses, pedestals, and pedestal-straps, combined with bolts 25 to unite the saddle, blocks, and straps, substantially as described.

26. The pedestals provided with the upwardly-turned abutment and the arch-bar-sustaining blocks *f*, provided each with an inclined 30 end to meet the said abutment, combined with the arch-bar extended through grooves in the said blocks and into the said pedestals, substantially as described.

27. The metallic transom, arch-bars, trusses, 35 pedestals, and end pieces, *n'*, combined with the braces *r*² and *r*⁴, connected to the said transom, substantially as described.

28. The metallic transom, arch-bars, trusses, pedestals, and end pieces, *n'*, combined with the braces *r*² and *r*⁴, connected to the said transom, and with the braces *n*, all combined to operate substantially as described. 40

29. The combination, with the pedestals and end pieces, of the diagonally-placed pedestal-braces 58, substantially as described. 45

30. The combination, with the wheels, axles, and bearings, the arch-bars and trusses arranged in the line of the bearings, and springs also located in the line of the bearings, of an equalizer-bar located directly under the arch- 50 bar and in line with the bearings, substantially as described.

31. In a passenger-car, wheels, axles, bearings therefor, pedestals to receive the bearings, arch-bars, trusses, bolster-supporting springs, 55 links, and spring-seats mounted thereon, combined with equalizers, all located outside the wheels, substantially as and for the purpose described.

32. In a car-truck, end pieces crossing each 60 end of the car-truck and a transom having upwardly-extended transom-braces shaped to receive within them the bolster, combined with channel or flanged braces extended from one to the other of the said end pieces and connected to the said transom-braces, substan- 65 tially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

LUTHER K. JEWETT.

Witnesses:

G. W. GREGORY,
F. L. EMERY.