

(No Model.)

2 Sheets—Sheet 1.

E. CLIFF.  
CAR TRUCK FRAME.

No. 567,579.

Patented Sept. 15, 1896.

Fig. 1.

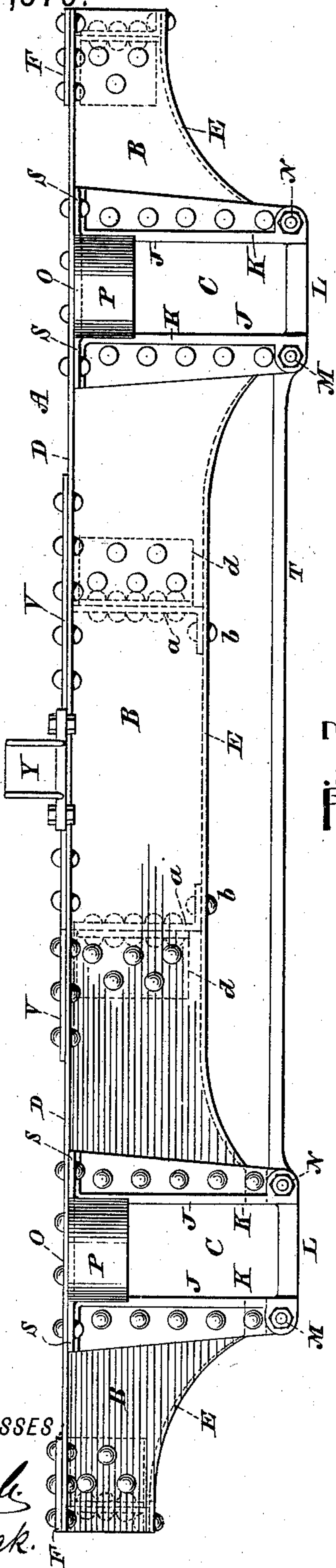
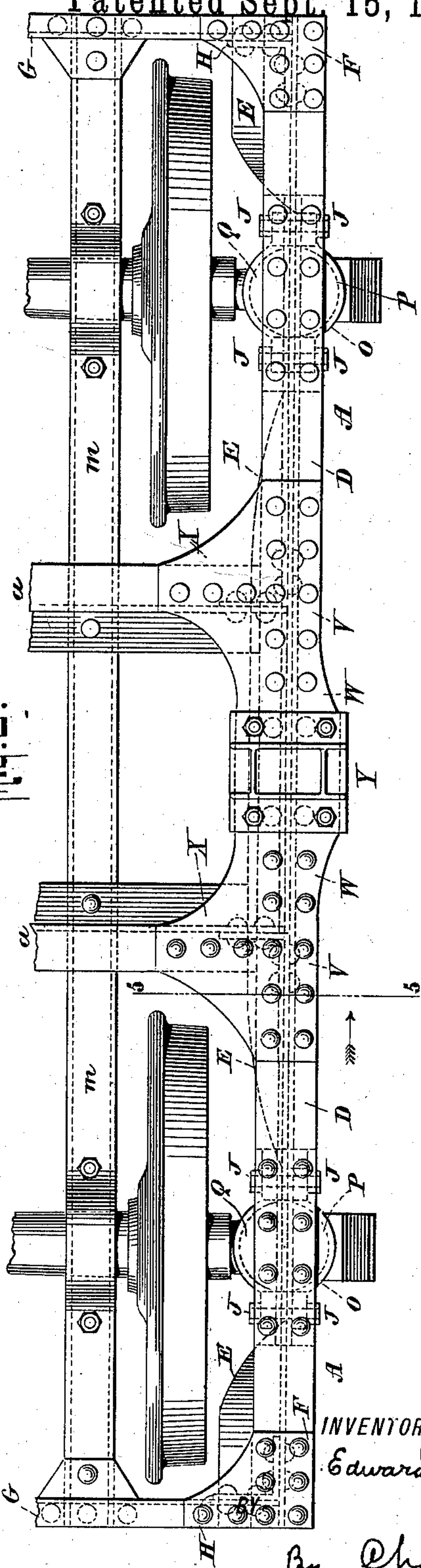


Fig. 2.



WITNESSES

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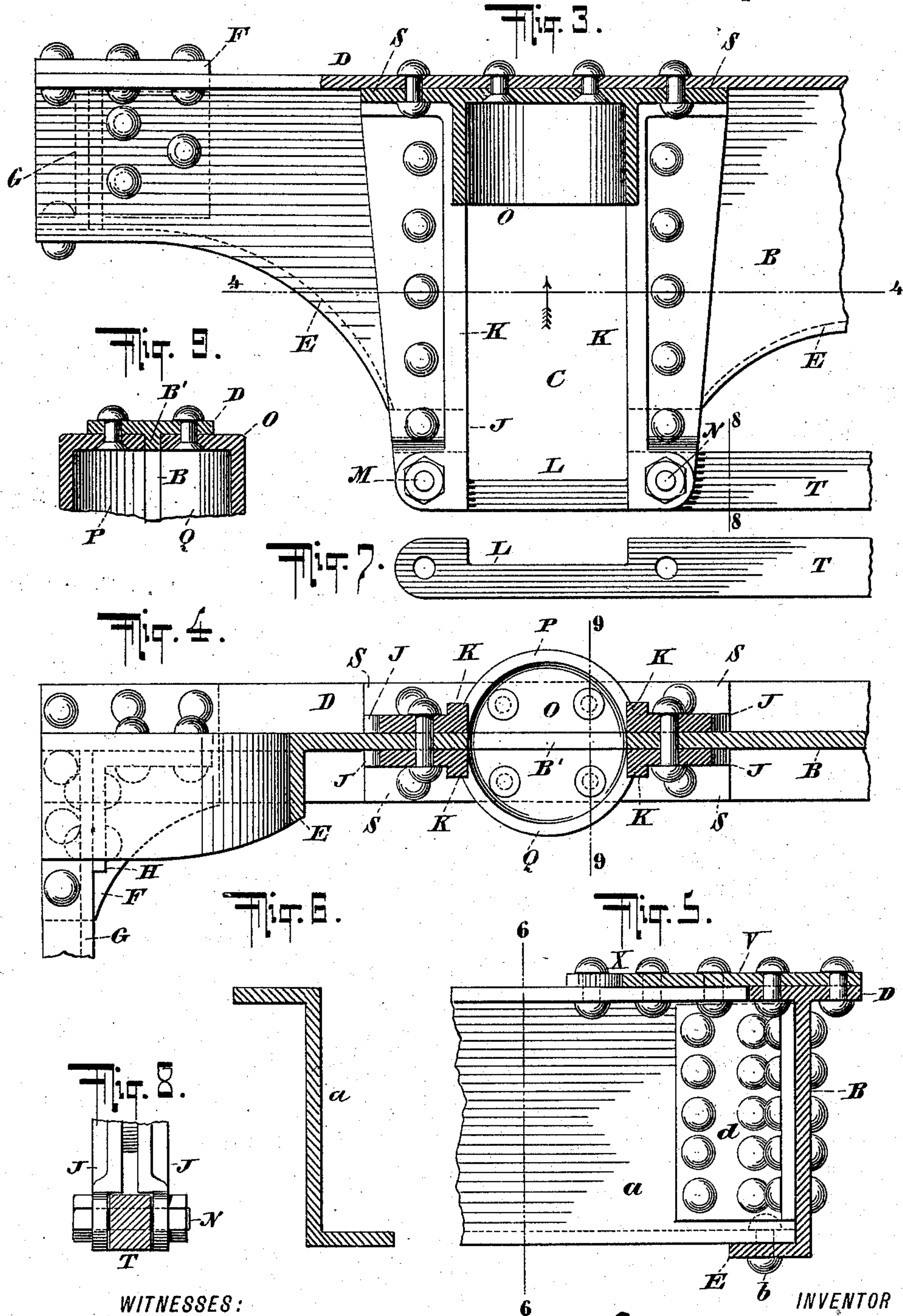
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# UNITED STATES PATENT OFFICE.

EDWARD CLIFF, OF NEWARK, NEW JERSEY.

## CAR-TRUCK FRAME.

SPECIFICATION forming part of Letters Patent No. 567,579, dated September 15, 1896.

Application filed June 11, 1896. Serial No. 595,099. (No model.)

*To all whom it may concern:*

Be it known that I, EDWARD CLIFF, a citizen of the United States, and a resident of Newark, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in Car-Truck Frames, of which the following is a specification.

The invention relates to improvements in car-trucks, and particularly to the construction of the frames of car-trucks without regard to the form or construction of the wheels, axles, axle-boxes, springs, side bearings, or center bearing.

The invention consists in novel features of construction, hereinafter described and claimed, pertaining to the side frames of the truck, the pedestal-frames for the axle-boxes, and the bolster or bolsters connecting said side frames, with certain further details of construction hereinafter referred to.

The object of my invention is to provide a truck-frame of great durability and efficiency and simple and convenient in construction and use.

The invention will be fully understood from the detailed description hereinafter presented, reference being had to the accompanying drawings, in which—

Figure 1 is a side elevation of a car-truck frame constructed in accordance with and embodying the invention. Fig. 2 is a top view of a portion of same. Fig. 3 is an enlarged side elevation, partly in section, of one end of said truck-frame. Fig. 4 is a horizontal section of same on the dotted line 4 4 of Fig. 3. Fig. 5 is an enlarged vertical section through a portion of the truck-frame on the dotted line 5 5 of Fig. 2. Fig. 6 is a transverse section through one of the Z-bolsters on the dotted line 6 6 of Fig. 5. Fig. 7 is a side view of a part of the tie rod and bar closing the lower end of the pedestal. Fig. 8 is a detached vertical section on the dotted line 8 8 of Fig. 3, and Fig. 9 is a detached vertical section on the dotted line 9 9 of Fig. 4.

In the drawings, A designates the side frame of the truck, said side frame comprising the main plate B, which at its lower edge curves downward at opposite sides of and toward the pedestals, and is formed along its upper edge with the flange D, having, preferably, substantially parallel edges and extending the full

length of the side frame. At the lower edge of the main side plate B are formed the inwardly-extending flanges E, which are somewhat segmental in form and are at both sides of the pedestals provided for the axle-boxes. The lower edge of the side frame of the truck is on curved lines, and the segmental flanges E follow the form of said edge. At the ends of the side plates B are provided the corner-plates F, which connect the sides with the ends of the truck-frame, said ends being of channel-iron, as shown. The ends (lettered G) of the truck-frame are also secured to the sides A by means of the angle-irons H, (illustrated by dotted lines in Figs. 2 and 4,) which are riveted to both the ends G and side plates B. The upper flange of the channel-irons forming the ends G of the truck-frame is riveted to the corner-plate F, while the lower flange of said channel-iron rests upon the end flange E and is riveted thereto.

The side plate B at suitable points adjacent to its ends is cut away to form spaces C for the reception of the usual axle-boxes, and at the edges of said spaces are secured upon opposite sides of the plate B the pedestal-frames J, having the corresponding flanges K, which form the rubbing-surfaces for the axle-boxes. The frames J correspond with one another at opposite sides of the said spaces and at the opposite sides of the side plate B. The frames J are riveted to the side plate B and also to the flange D formed along the upper edge of said plate, as shown. The vertical sides or legs of the frames J at opposite sides of the spaces C for the axle-boxes are connected by the bar L, which is secured by means of the bolts M N between the lower ends of said sides or legs of the frames J, and said bar L may be removed when desired by freeing the said bolts M N. When it is desired to remove the wheels from the truck-frame, it will be found convenient to detach the bar L. At the upper portions of the spaces C provided for the axle-boxes are the inverted boxes O for the usual springs, said boxes being formed in two sections P Q, which correspond with one another and extend between the flanges K of the pedestal-frames and at opposite sides of the side plate B. The sections of the boxes O are integral with their respective frames J and at their upper ends



are formed with the flanges S, which are riveted to the horizontal flange D formed on the upper edge of the side plate B. The upper closed end of the sections of the boxes O are  
 5 riveted to the said flange D, the lower ends of the rivets securing the top of the boxes to the flange D being flush with the lower surface of the top of said boxes, and said sections at their upper inner edges close tightly against  
 10 the portions B' of the side plate B below the flange D.

The lower ends of the frames J J at the inner sides of the spaces C are connected together by the tie-rod T, which is held upon  
 15 the bolts M, as shown in Fig. 1, and is preferably integral with the bars L, closing the lower end of said spaces.

Upon the central portion of the horizontal flange D, extending along the top of the side  
 20 plates B, is securely riveted the plate V, which has the outward extension W and the two inward extensions X, as illustrated in Fig. 2, and upon the central portion of this plate V is securely bolted the side bearing Y, of known  
 25 form and construction. The bearing Y occupies the outward extension W formed on the plate V.

The side plates B of the truck correspond with one another, and each is provided with  
 30 all of the features described above, and the said side plates are connected at their ends by the channel-irons G and at opposite sides of their transverse center by the Z-beams or bolsters *a a*, whose upper flanges pass below  
 35 the extensions X X of the plate V and abut against the inner edges of the flanges D on the plates B, being firmly riveted to said extensions, as illustrated in Fig. 5. The lower  
 40 flanges of the Z-beams *a a* rest upon the flanges E of the plates B and are there secured by rivets *b*. The ends of the Z-beams *a a* are further secured to the side plates B by means of angle-irons *d*, which are riveted to the vertical  
 45 vertical portion of said Z-beams and also to the vertical portion of the plates B, as clearly illustrated in Fig. 5. The inner ends of the extensions X of the plate V are coextensive in width with the upper flanges of the Z-beams *a a*, and from said flanges the said  
 50 extensions Y curve outward in opposite directions to the main body of the plate V.

The end beams G and bolsters or Z-beams *a a* are connected together and the whole structure strengthened by the parallel safety  
 55 channel-iron beams *m*, of known construction.

The upper flanges of the Z-beams *a a* or bolsters do not pass below the upper flanges D formed on the side frames, but simply abut against the inner edges of said flanges, and  
 60 hence the upper surface of the flanges D and the upper surface of the upper flanges of the Z-beams are on the same horizontal plane and evenly receive the inward extensions of the plate V, to which they are riveted. The  
 65 plate V may be in one piece or in more than one piece, in accordance with the distance the Z-beams or bolsters are separated one from

the other. If the Z-beams or bolsters are in near relation to the center of the truck-frame, as illustrated in Figs. 1 and 2, it will be found  
 70 convenient to have the plate V in one piece and formed with both the inward extensions to pass over and engage the ends of the said Z-beams; but in the construction of a six-wheel truck-frame the bolsters will be more  
 75 widely separated in order that an additional pedestal may be interposed between them, and under such circumstances the two extensions for engaging the bolsters will not be in one piece of material, but will constitute two  
 80 separate plates, both secured to the upper flanges D and each to its own bolster.

Within the outlines formed by the pedestal-frames J will be placed the usual axle-boxes, which will have their vertical move-  
 85 ment between the flanges K K of the pedestal-frames and the adjoining edges of the side plate B; and above the said axle-boxes will be placed the usual or any suitable springs whose upper portions will be retained within  
 90 the boxes O, formed integral with said pedestal-frames and connecting the flanges K K thereof at opposite sides of the said plate B.

The parts of the truck-frame both in their detail and their relative arrangement with  
 95 one another combine to produce a truck-frame of great durability and efficiency simple and convenient in construction and use.

The invention is not limited to the construction of four-wheel trucks, but in the  
 100 drawings has been illustrated in connection with a four-wheel truck. The invention is equally applicable to the construction of six-wheel trucks, in the construction of which that portion of the side plate B between the  
 105 two pedestals will be duplicated, and between the two plates B then used will be applied a pedestal of the construction above described, whereby the proper length of truck-frame may be secured and each side of the  
 110 truck-frame have three pedestals. In the construction of a six-wheel truck the Z-beams or bolsters will be more widely separated than illustrated in Fig. 2, and one of the bolsters will be applied to one side plate B and the  
 115 other to the other or additional side plate B, and between the bolsters thus arranged will be located the additional pedestal-frame J above referred to.

It will be observed that the pedestal-frames  
 120 J are not at the extreme ends of the sides of the truck-frame, but are considerably removed from said extreme ends, whereby a very substantial portion of the side plates is  
 125 permitted to project beyond the pedestal-frames, where it materially increases the strength of the truck and affords durable and convenient means for securing the ends of the side frames to the end beams by which  
 130 said side frames are connected.

It will be observed upon reference to Fig. 2 that the lower flanges of the Z-shaped beams constituting the bolsters extend inward toward one another and are at the lower edges



of the inwardly-turned flanges, which are integral with the side frames, and that the upper flanges of said **Z**-beams extend outward from one another. By this arrangement of the **Z**-beams I present bolsters of maximum width, the width of each bolster being from the outer edge of its upper flange to the inner edge of its lower flange; and when the bolsters are thus formed of **Z**-beams and arranged as described they combine to present a very broad surface which in case of accident would aid in preventing the falling of broken parts to the track. If, for instance, the usual spring-bolster which on passenger-cars would be used in addition to the **Z**-shaped beams should become broken or detached, through accident or otherwise, it would be caught and prevented from falling to the track by the broad surfaces presented by the **Z**-shaped beams arranged as illustrated in Figs. 1 and 2. The lower flanges of the **Z**-shaped beams may also be utilized to dispense with the usual sand-planks. It is obvious that **I**-beams would not present the advantages of the **Z**-beams shown, since the width of an **I**-beam is simply the width of its upper flange, and any object starting to fall downward and passing the upper flange of an **I**-beam would assuredly pass the lower flange of the beam also. This result would not take place when **Z**-beams constructed and arranged as shown are employed.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. In a car-truck, the metal side frames having the upper and lower inwardly-extending flanges and provided with pedestals for the axle-boxes and springs, combined with the bolsters connecting said side frames, and the upper plates riveted to the upper flanges of said side frames and said bolsters, said bolsters being formed of parallel **Z**-shaped beams whose lower horizontal flanges turn inward toward one another and whose upper flanges are cut away at their ends to abut against the inner edges of the upper flanges of the side frames, and whose webs extend inward to the webs of the side frames to which they are secured; substantially as set forth.

2. In a car-truck, the metal side frames having the upper and lower flanges and provided with pedestals for the reception of the axle-boxes and their springs, combined with the plates secured upon the upper flanges of said side frames and having the inward extensions, and the bolsters formed of the parallel **Z**-shaped beams connecting said side frames and secured to said extensions and to the webs of said side frames, the lower flanges of said **Z**-shaped beams extending inward toward one another; substantially as set forth.

3. In a car-truck, the metal side frames having the outwardly and inwardly extending upper flange and the inwardly-extending lower flange, said flanges being integral with said sides, and the pedestals having spring-pockets applied to said sides, combined with

the plates riveted upon the upper flanges of said side frames, and the rolled flanged beam bolster connecting said sides and secured to said plate, to the said lower inwardly-extending flange, and to the web of said side frames; substantially as set forth.

4. In a car-truck, the side frames having the upper and lower flanges and provided with the pedestals for the reception of the axle-boxes and springs, combined with the plates secured upon the upper flanges of said side frames and having the outward extension and the two inward extensions, the side bearings secured upon said plates at about their outward extensions, and the bolsters connecting the side frames and being formed of **Z**-shaped beams whose ends are secured to said side frames and to said inward extensions; substantially as set forth.

5. In a car-truck, the metal side frames having the integral outwardly and inwardly extending upper flanges and the integral inwardly-extending lower flange and provided with the pedestals for the reception of the axle-boxes and their springs and having the extensions beyond said pedestals, said extensions being likewise provided with the integral upper and lower flanges, combined with the flanged rolled beam bolster connecting said side frames, the flanged rolled beams connecting said side frames at their extreme ends, the horizontal corner-plates **F** connecting said side frames with the said end beams, and the vertical angle-plates connecting said side frames and end beams; substantially as set forth.

6. In a car-truck, the metal side frames having the upper and lower flanges and provided with the spaces for the reception of the axle-boxes and their springs, and the bolster connecting said side frames, combined with the corresponding pedestal-frames on the opposite edges of said spaces and opposite sides of said side frames and riveted thereto, said frames each comprising the guiding-flanges for the axle-boxes and the integral sections of the inverted boxes for the springs, said sections connecting the opposite portions of said pedestal-frames and being integral therewith; substantially as set forth.

7. In a car-truck, the side frames having the upper flanges and provided with the spaces for the axle-boxes and springs, combined with the bolsters connecting said side frames, the end beams connecting said side frames at their ends, and the pedestal-frames on the opposite edges of said spaces and opposite sides of the side frames and having the vertical guiding-flanges and the horizontal flanges to meet and be riveted to the top flange of the said side frames; substantially as set forth.

8. In a car-truck, the side frames having the upper flanges and provided with spaces for the reception of the axle-boxes and their springs, combined with the bolster connecting said side frames, the end beams connecting said side frames at their ends and the pedes-



tal-frames on the opposite edges of said spaces and opposite sides of said side frames, the said pedestal-frames comprising the guiding-flanges, the flanges for engaging the vertical  
5 faces of said side frames, the horizontal flanges for connection with the top flanges of the side frames and the inverted boxes which connect said guiding-flanges and are riveted to the top flanges of the side frames; sub-  
10 stantially as set forth.

9. In a car-truck, the side frames having the upper flange and cut away at definite points nearly up to said upper flange to form spaces for the axle-boxes and their springs,  
15 combined with the pedestal-frames on the opposite edges of said spaces and opposite sides of said side frames and comprising the guid-

ing-flanges for the axle-boxes, the flanges engaging the vertical faces of the side frames, the horizontal flanges to engage the top flanges  
20 of the side frames, and the box-sections which connect the said guiding-flanges at opposite sides of the side frames and close against those portions of the side frames remaining  
25 above the said spaces; substantially as set forth.

Signed at New York, in the county of New York and State of New York, this 9th day of June, A. D. 1896.

EDWARD CLIFF.

Witnesses:

CHAS. C. GILL,

E. JOS. BELKNAP.