2 Sheets--Sheet 1.

J. STEPHENSON.

Devices for Bracing Car-Pedestals.

No. 150,908. Patented May 12, 1874.

Fig. 1.

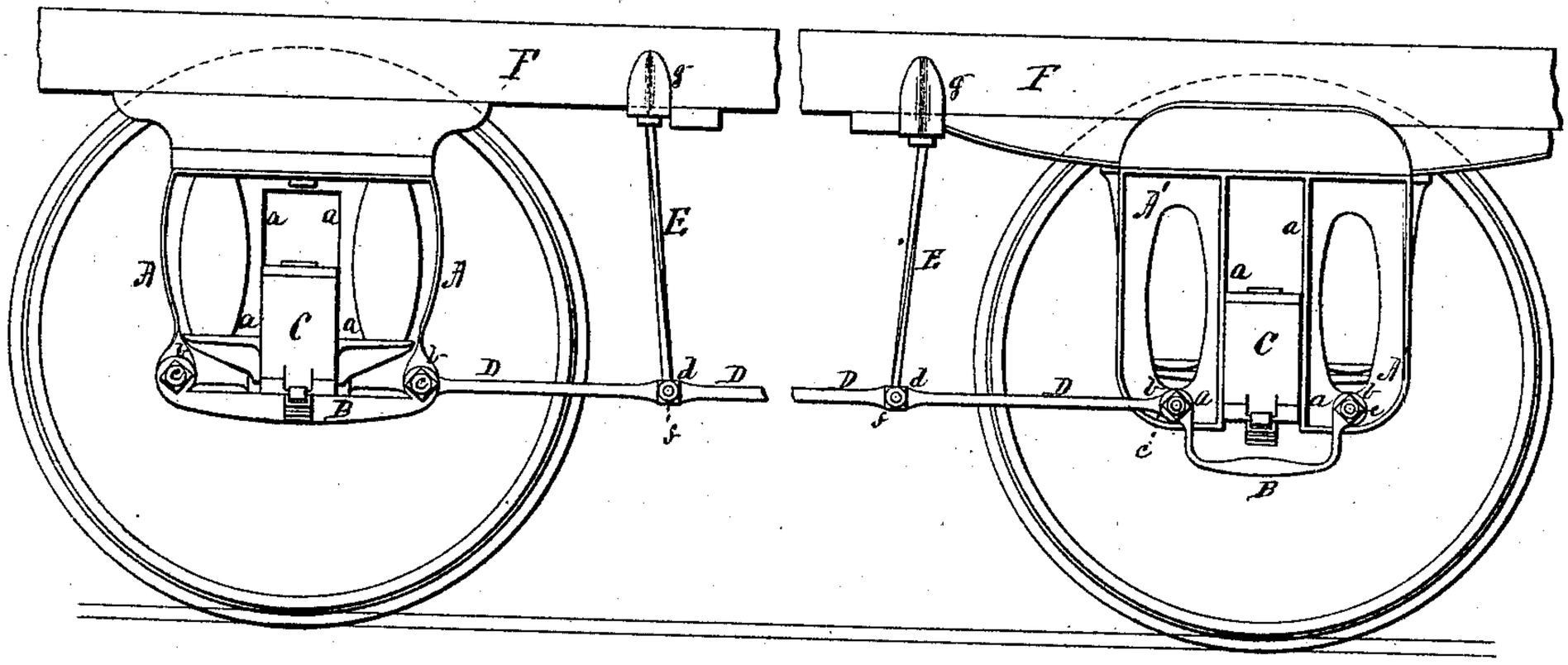


Fig. 2.

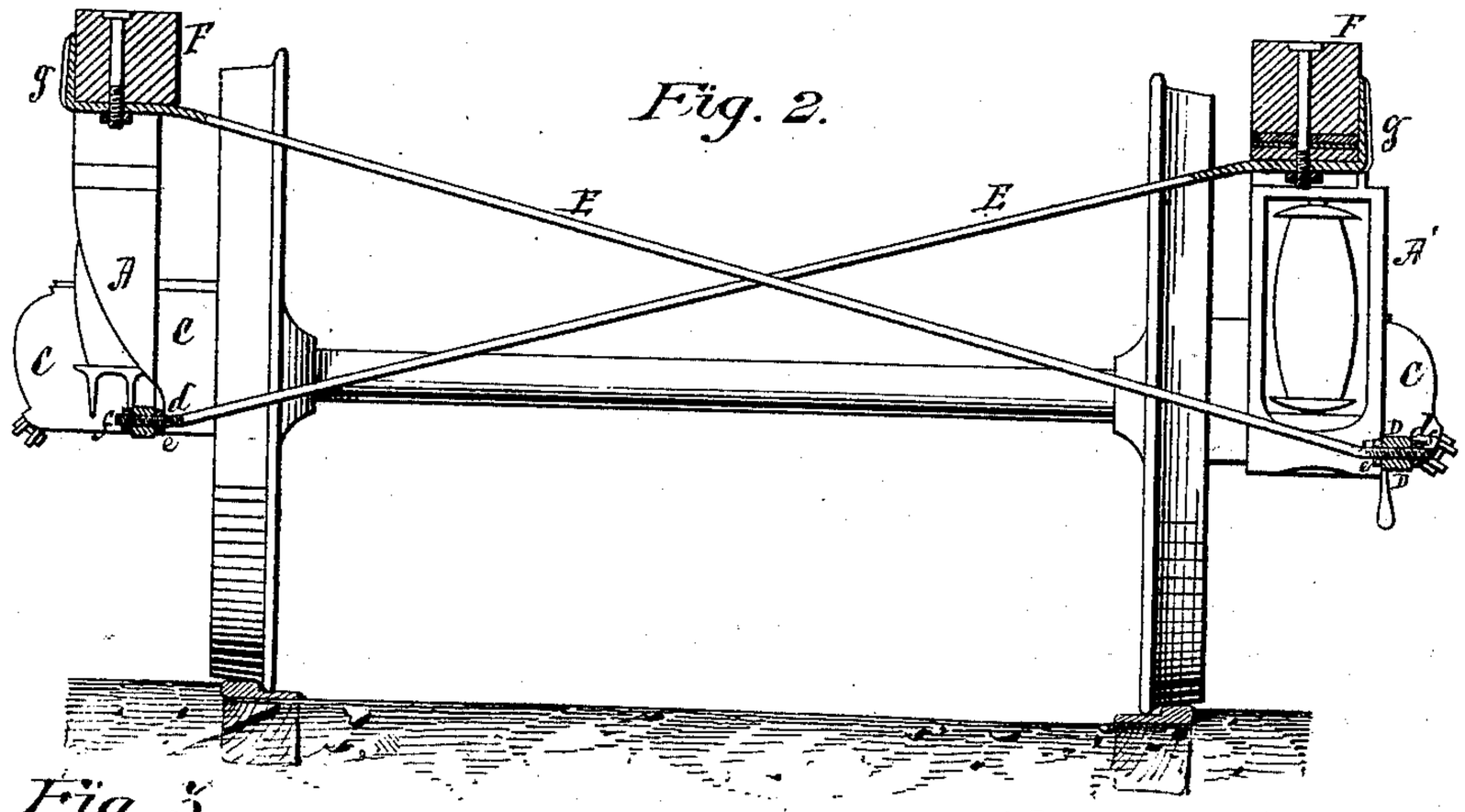


Fig. 3.

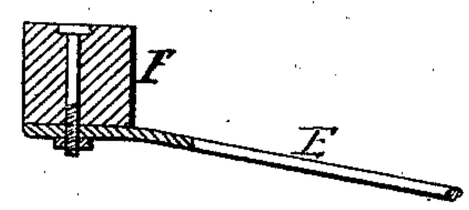
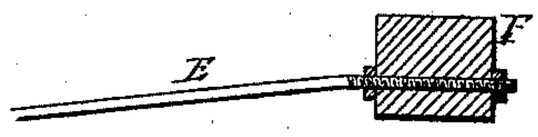


Fig. 4.



Witnesses:
D. G. Stuart
E. D. Clark

Inventor:
John Stephenson
per L. Hannay Atty.

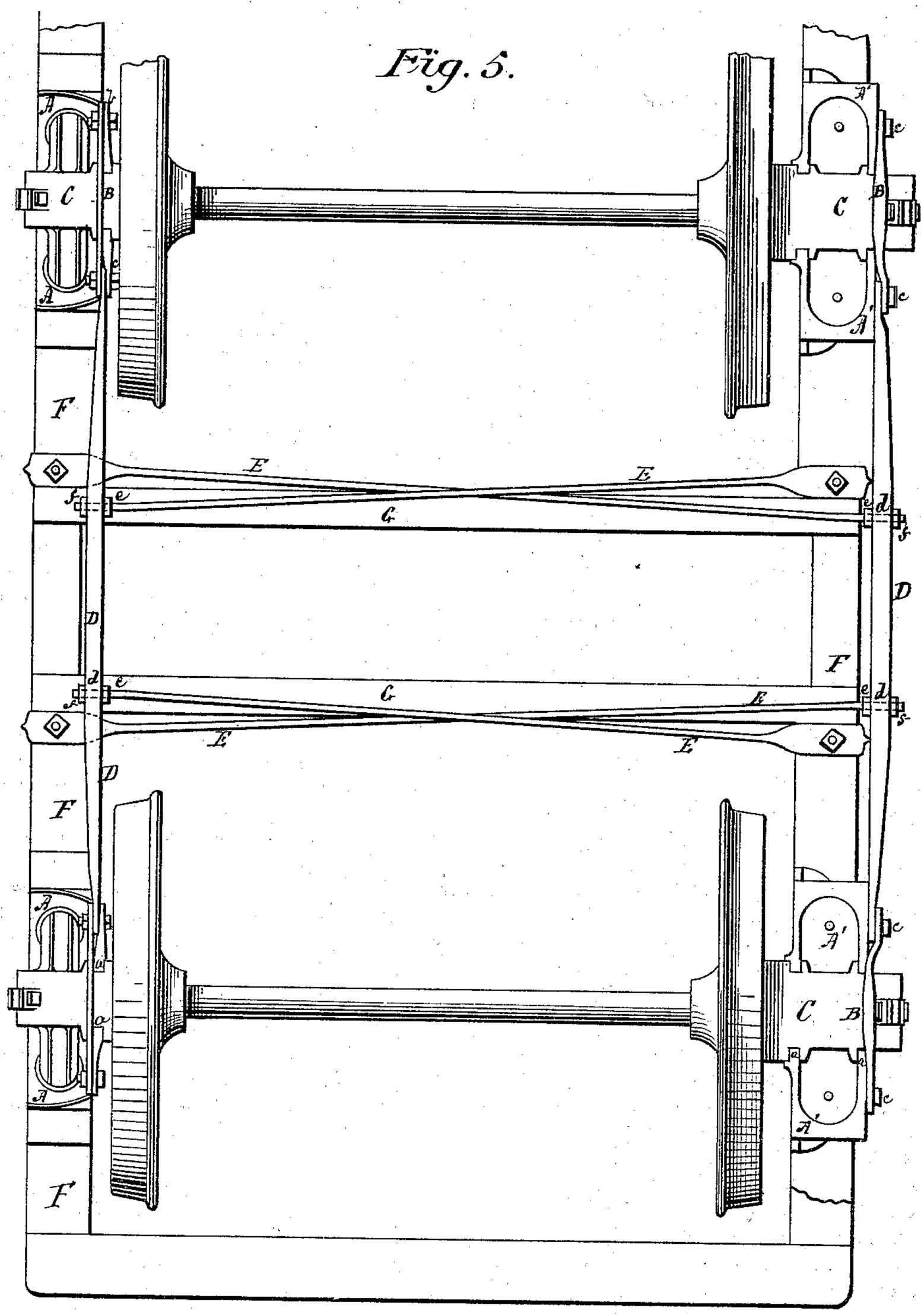
2 Sheets--Sheet 2.

J. STEPHENSON.

Devices for Bracing Car-Pedestals.

No. 150,908. Patented May 12, 1874.

Fig. 5.



Witnesses:
D. G. Stuart
E. D. Clapp

Inventor:
John Stephenson
per P. Hannay Atty.

UNITED STATES PATENT OFFICE.

JOHN STEPHENSON, OF NEW YORK, N. Y.

IMPROVEMENT IN DEVICES FOR BRACING CAR-PEDESTALS.

Specification forming part of Letters Patent No. **150,908**, dated May 12, 1874; application filed January 14, 1874.

CASE D D.

To all whom it may concern:

Be it known that I, JOHN STEPHENSON, of New York city, in the county of New York and State of New York, have invented certain new and useful Improvements in the Mode of Bracing Street-Car Pedestals; 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 pertains to make and use it, reference being had to the accompanying drawings, which form part of this specification, in which—

Figure 1 represents a detached view, in elevation, of the running-gear of a street-car having my improved mode of bracing applied thereto, the sill and connecting-bars being represented as broken off; and Fig. 2, a vertical cross-section of the same, taken centrally between the front and rear wheels. Figs. 3 and 4 represent detached sectional views of modified plans for attaching the ends of the stay-rods to the sills of the car, and Fig. 5 a bottom view of a car having my improvements applied thereto.

My invention relates to a new and improved system of bracing the pedestals of street-cars, which, from the nature of the forces exerted upon them, are liable to be thrust outward at the foot, and when thus thrust out prevent the axle-box from playing freely up and down between their jaws. This, as a necessary consequence, causes the car to ride roughly, and at the same time causes the jaws of the pedestals and guides to the axle-box to wear rapidly away. It also causes the brass bearings of the journals to wear out of level, and to become quickly destroyed. In addition, and incident to these evils, the axle itself acquires much end play, which causes the concussions to become more violent, and thereby rapidly hastens and increases the troubles.

I am aware that systems of bracing the pedestals have heretofore been adopted, with a view of remedying these evils, but, so far as I know, without practical success. Of these, one plan is to run a side bar on each side of the car under the foot of one pedestal to and under the foot of the other, and then connecting these two side bars together by two other transverse bars, thus holding the two side bars and their connected pedestals to an adjusted distance from each other; but this arrangement, at best, is only a partial remedy, because the forcing out of the pedestals of one side of the car pulls the pedestals on the opposite side of the car with them, and this process goes on from side to side with every lateral thrust of the axle, until their efficiency is so impaired that the car must be stopped for repairs. Another plan consists in using diagonal stays, the one end of which is secured to the foot of the pedestal and the other passed upward and inward to the floor-beam. This system, though an improvement on the former, is not sufficiently effective, not only because the proximity of the wheel prevents the stay from being passed sufficiently far under the car to attain a good bracing position, but because the attachment of pedestal-braces to the floor of the car is positively injurious, inasmuch as when the car is heavily loaded, and more especially when a crowd stands in the center of the floor, the floor-timbers deflect, and thereby loosens the stays. This tendency is rapidly increased by the incessant and powerful thrusts and blows of the axle, which, operating through the pedestal-stays, ultimately pull and break down the floor-timbers. Meanwhile, the pedestal itself is thereby thrown out of plumb, creating anew all the evils before referred to.

Similar results flow from all systems of bracing in which one end of the stays is attached or secured to the floor of the car. Moreover, some of the systems referred to cause the side bar to pass entirely across the under side of the axle-box, which is very inconvenient, as in such case, whenever it is necessary to take the axle-box out of the pedestal, the whole system of bracing must first be removed, causing much trouble, as well in its removal as in its subsequent readjustment.

These evils are obviated by my improved system, which consists, first, in making the pedestals with a seat or lodgment for the end of the side bar, so arranged that the side bar will be entirely out of the way of the axle-box when being removed from the pedestal, the seat for this purpose being preferably arranged on the face or outside of the pedestal; secondly, in the use of a removable retainer for holding the axle-box in place, in connec-

tion with the side or tie bars, which connect the pedestals on the same side of the car together; thirdly, in the use of two side bars, which extend to and connect the two pedestals on each side of the car; fourthly, in providing each side bar with bosses or enlargements, through each of which a hole is made of suitable size, and in a horizontal direction, for the reception of one end of a cross-stay, and which end is preferred to be made adjustable, by having a screw-thread cut thereon, and of a length sufficient to receive a nut on each side of the bar, through the instrumentality of which the required adjustment may be made, and that end of the stay-rod firmly secured to the side bar, previous to which, however, the other or farther end of the cross-stays, after rising or inclining upward for the purpose, should be secured to the sill of the car-body in any suitable manner. By this plan a positive anchorage is given to the head of the cross-stay. This end secured to the sill, (and it may be done either directly or indirectly,) the nut on the other end on the outside of the side bar is then screwed up to its place. The rod having, as before stated, through the inner nut, been first adjusted to the required degree of tension, cannot then lose its position, but, on the contrary, will afford a firm support to the pedestal against the outward thrusts of the axle. For this purpose that end of the cross-stay which is secured to the sill may be provided with a returned end or rising member, to rest, or rather bear, against the external face of the sill; or it may be let into the sill or other part of the frame-work beneath, so as to give to it a firm hold on the sill; or, instead of providing it with a rising member, a similar result may be obtained by indirect connection with the same through interposed metal or wood connections. Or yet another method may be adopted by cutting a screw-thread on the upper end of the cross-stay, and passing it through the sill, and then securing it thereto by means of a nut, in which case another nut may be placed on it on the inner side of the sill, in the same manner as the inner nut on its other end on the inside of the side bar; or it may be secured in any other suitable manner, so long as the drag on the stay is either directly or indirectly thrown upon that sill which is arranged on the opposite side of the car to the pedestals braced.

To enable others skilled in the art to make, construct, and use my invention, I will now proceed to describe its parts in detail, omitting a particular description of such parts of the car and its outfit as are unnecessary to a full understanding of my present improvements.

In the drawings, my improvement is represented as being applied to two different styles of pedestals, A A′, the one style, A, having but two jaws, while the other, A′, has four, for the guidance and support of the axle-box. Each of these pedestals is provided with a retainer or tie-plate, B, for keeping the axle-box C in position between the jaws *a* of the pedestal. These retainers are secured to lugs or lodgments *b*, formed on the face and lower ends of the pedestals, by screw bolts and nuts *c*. To the inner lug *b* of each pair of pedestals is secured one end of one of the ties or side bars D, it being first placed in position next the lug, and then the corresponding end of the retainer B arranged over it, and the two then secured to the lug by the screw bolt and nut *c*. By this arrangement the retainer B, whenever it is desired to remove the axle-box, may be detached from the lug *b* at the one end and loosened at the other, and thus be allowed to drop down out of the way, leaving the box free to be removed and afterward replaced, without having to detach the side bars D and the cross-stays E, as in the old way of bracing the pedestals. The side bars D serve to brace or connect the pedestals on the same side of the car firmly together, and are provided with a couple of bosses or enlargements, *d*, Fig. 1, through which is pierced, in a horizontal direction, a hole, for the reception of the ends of the cross-stays E, and are made wider than they are thick, so as to impart strength and rigidity in the line of strain. The end of the cross-stays which passes through the bosses *d* of the tie of side bar D is provided with a screw-thread, for a distance sufficient to afford adjustment of its length, in order to tighten or slacken the tension on the side bars, and is used in connection with two nuts, *e* and *f*—the one, *e*, on the inside of the bar for regulating the length of the rod, and the other, *f*, for tightening or screwing the bar D up to it. The other end of each of the stay-rods E is secured, either directly or indirectly, to the sills F, but preferably as shown at *g* in Figs. 1 and 2; for which purpose that end *g* is enlarged and upturned, so as to embrace or clasp, as with the hand, the under and outer sides of the sills F; or it may be secured as shown in Figs. 3 and 4, but the former mode is deemed better; or it may be provided with a T-shaped end, and secured directly to the end of the under side of the floor-beam G, as well as to the sill; or the floor-beam may be rigidly connected to the sill F by means of suitable brace or connecting plates, and the cross-stays then secured to it in any well-known and proper manner, and answer the same purpose, so long as the strain on the cross-stays is finally brought on the sills. By this means any outward thrust or blow imparted to the pedestals will be counteracted by the support given to them through the side bars D and cross-braces E from the sill F on the opposite side of the car, thereby obviating all the troubles heretofore referred to.

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

1. A tie or side bar, D, having holes to receive the ends of the cross-braces E, and ends to fit the seats in the face of the pedestals,

and by which it may be secured to the latter by bolts in a horizontal position, substantially as set forth.

2. The combination of the two pedestals of one side of a car with a side bar, D, and retainers B B, the latter being independently secured to their respective pedestals, in the manner and for the purpose set forth.

3. The combination of the two pedestals of one side of a car, side bar D, and one or more cross-braces, E, with the sill F on the opposite side of the car, substantially as and for the purpose set forth.

4. The combination of the two pedestals of one side of a car with an adjustable brace or braces, E, side bar D, and the sill F on the opposite side of the car, substantially as and for the purpose set forth.

5. The combination of the pedestal with the side bar D, the joint of union being in a vertical plane, and the joint-bolt at right angles thereto, for convenience of observation and access, substantially as described.

6. The combination of the pedestals and connecting-bar D of one side of a car and their brace or braces E and sill F on the opposite side with the corresponding pedestals and their connecting-bar, brace or braces, and sill of the other side of the car, the whole to operate in the manner and for the purposes set forth.

In testimony that I claim the foregoing I have hereunto set my hand this 23d day of December, 1873.

JOHN STEPHENSON.

Witnesses:
JOHN S. PUGH,
WILLIAM J. WALKER.