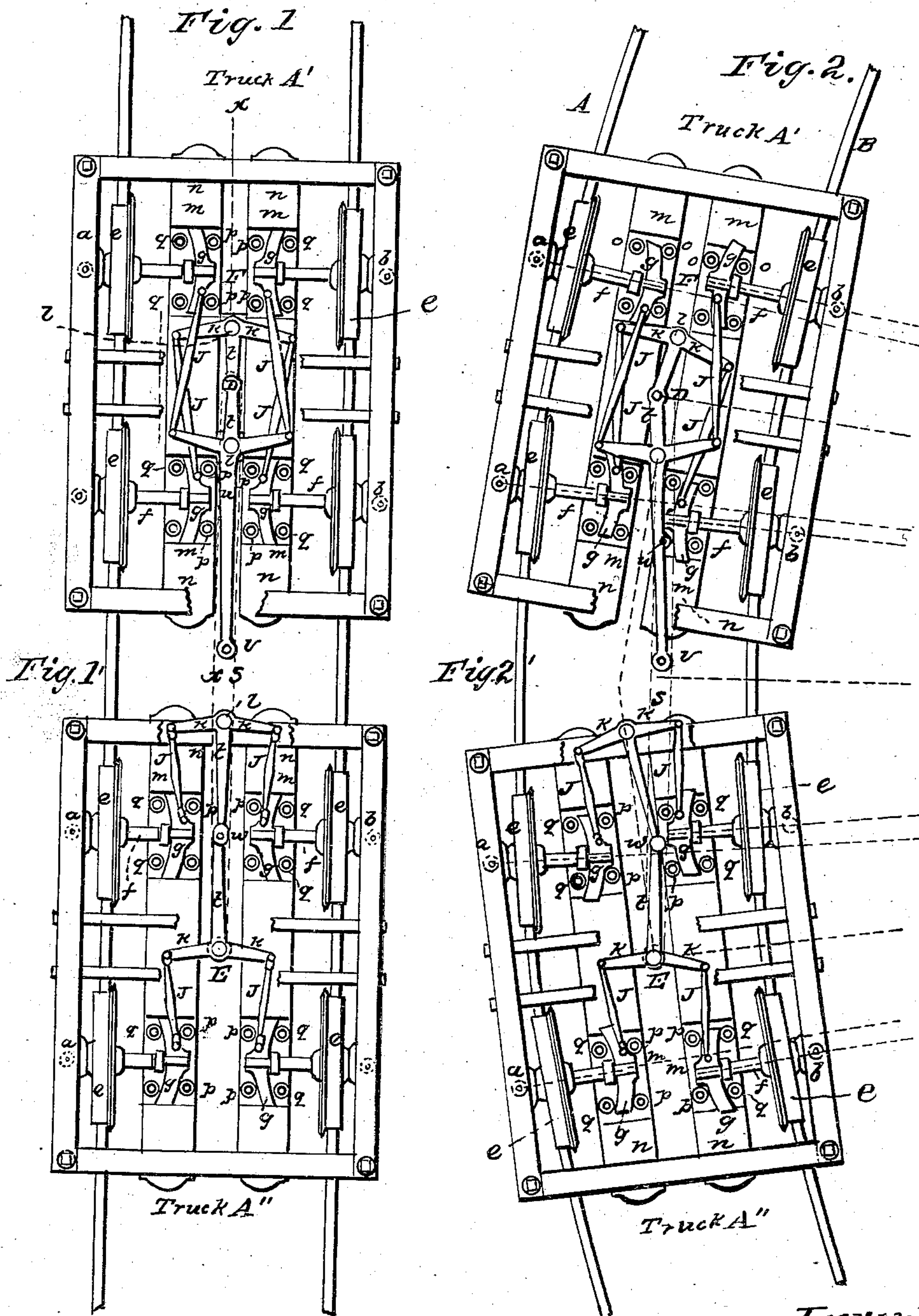


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Running Gear for Railroad Cars.

No. 86,685.

Patented Feb. 9, 1869.



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Inventors:

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Fig. 3.

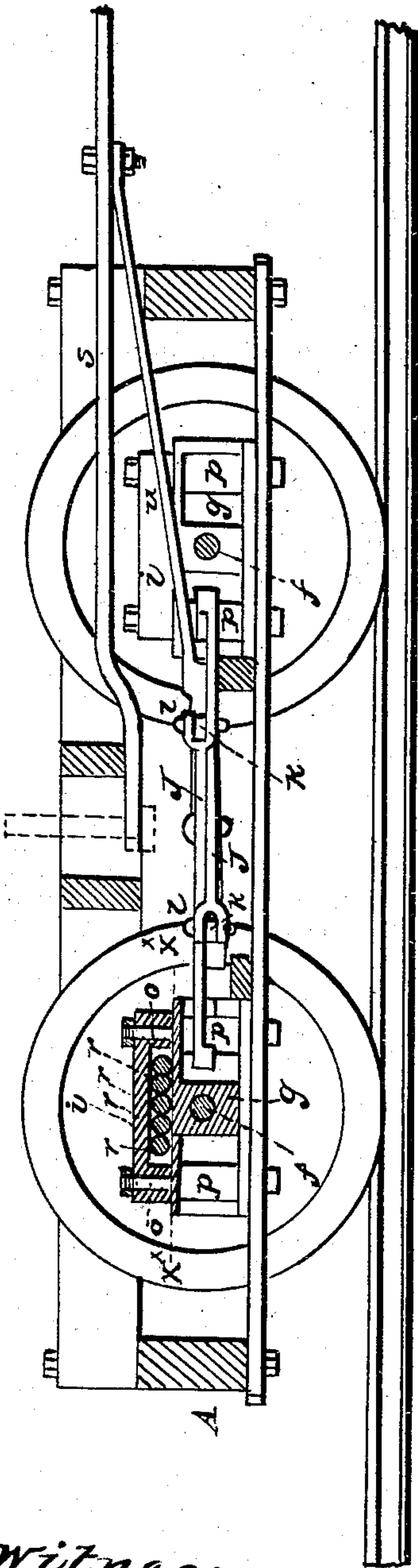
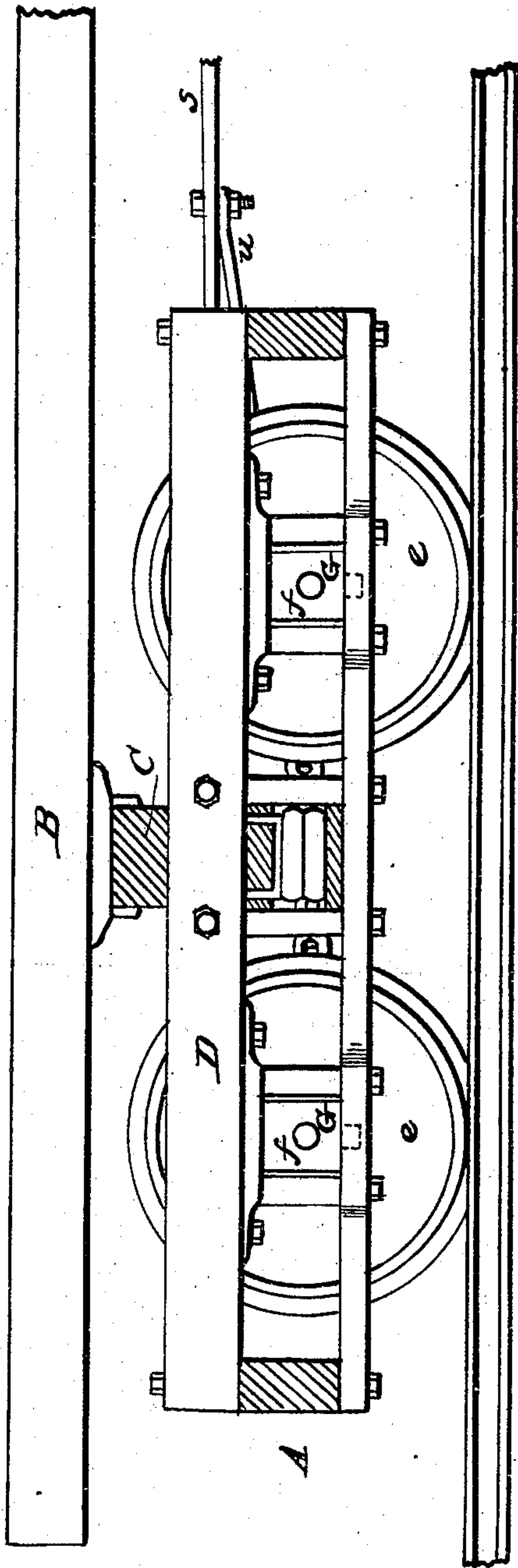


Fig. 4.



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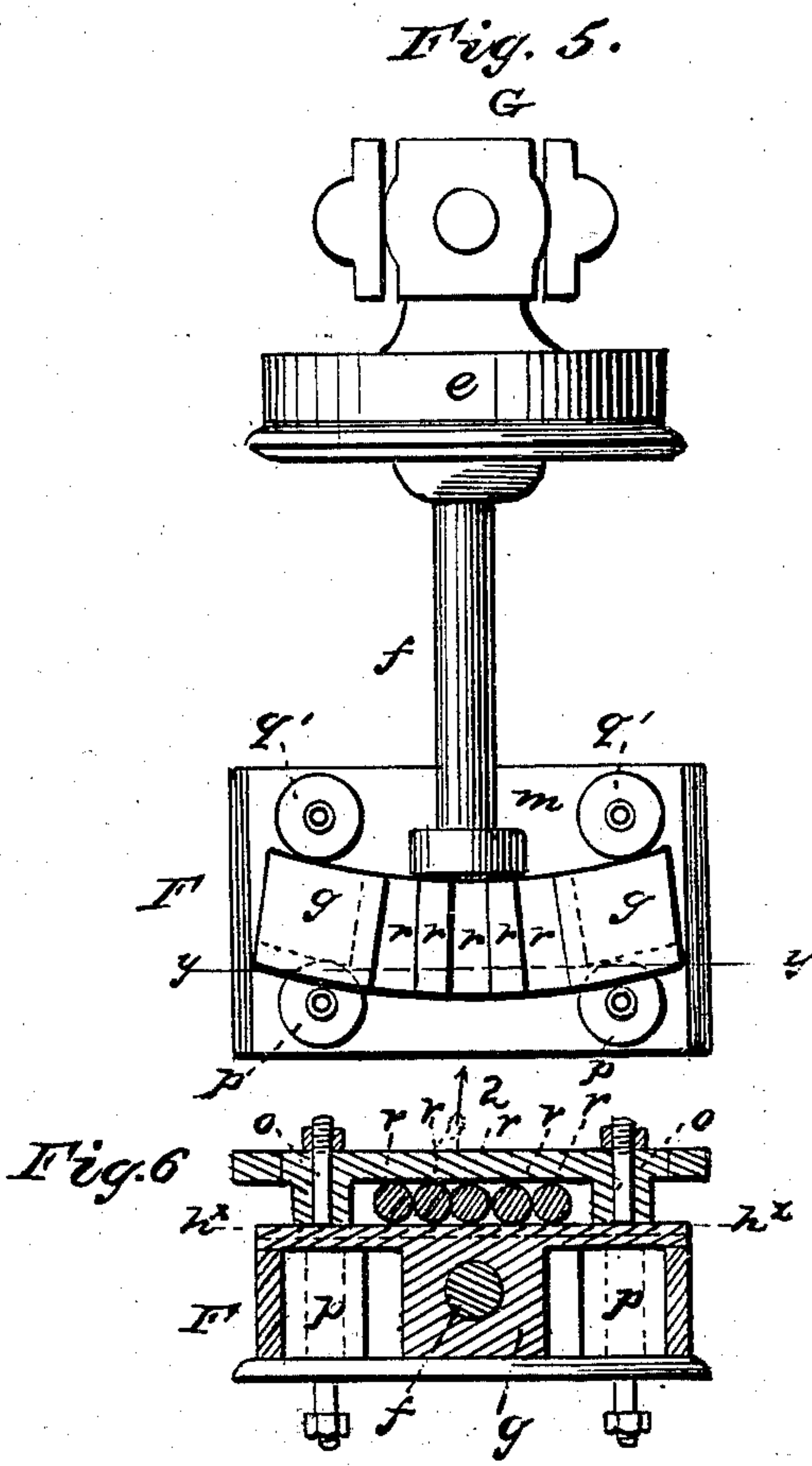
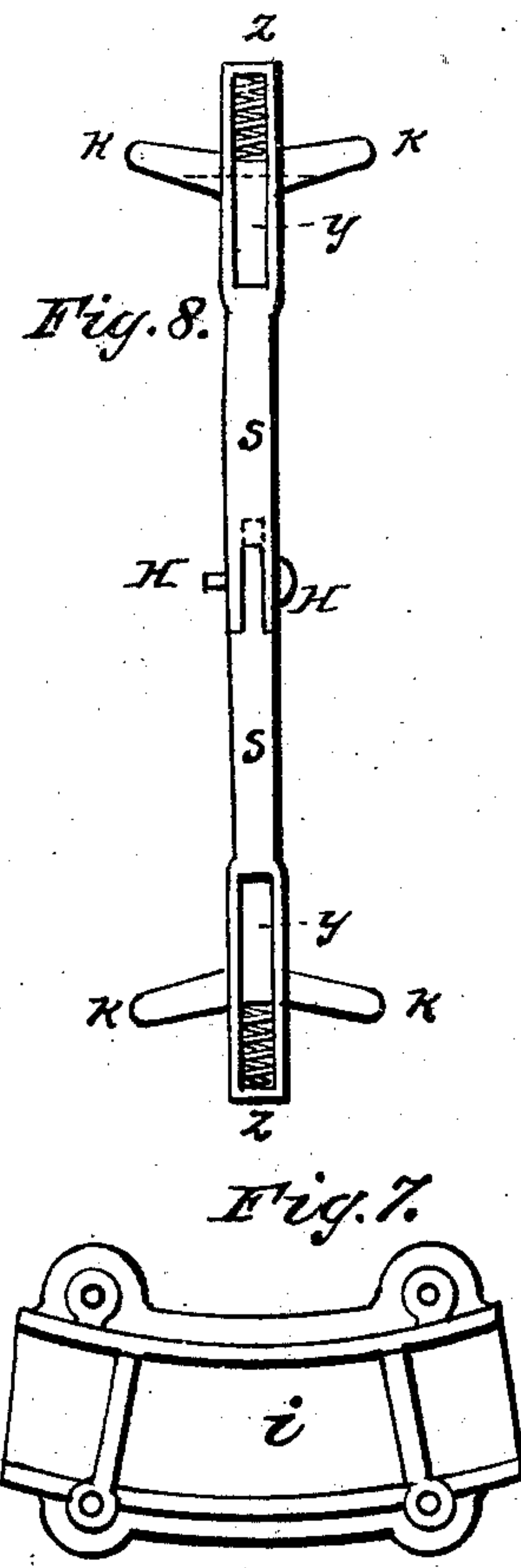
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# United States Patent Office.

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WILKESBARRE, PENNSYLVANIA.

Letters Patent No. 86,685, dated February 9, 1869; antedated August 10, 1868.

## IMPROVED RUNNING-GEAR FOR RAILROAD-CARS.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Be it known that we, JOSEPH R. PERRY, DANIEL W. PERRY, and JAMES PERRY, all of the borough of Wilkesbarre, in the county of Luzerne, and State of Pennsylvania, have invented certain new and useful Improvements in the Running-Gear of Railroad-Cars, whereby the wheels may at all times tend, in an automatic manner, to describe a curve of equal or less radius than the one over which they may be passing, also to be held permanently in position, and so held in running a straight line; and we do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawing, forming part of this specification.

The object of our invention is to so arrange the running gear of railroad-cars, and apply the same to the body and wheels, that said cars will run over curves and tangents of railroad-tracks with the greatest freedom from friction, torsion, and abrasion of their parts, and the least liability to break or twist the rails of the track out of position.

The nature of our invention consists in the arrangement of a traction-bar in such manner as to operate upon the centre-bolts, or upon two other points lying between the forward and back axles of a truck-frame, or car-body, for the purpose of producing an automatic adjustment of the axles and wheels thereof in running tangents and curves of railroads, and for the purpose of holding said wheels rigidly in position; also, in an adjustable lever attached to a traction-bar or the centre-beam of a car-body, for the purpose of operating arms or bars to produce such deflection of axles and wheels as to cause said wheels to tend to describe curves of less radii than, or equal radii to, the curves over which they may be running, and thereby operating said wheels in such manner as to lessen the centrifugal force against the impinged rails; also, in a journal-box of an improved construction; also, in an improved manner of supporting a pivot-box; also, in certain combinations of parts.

In the accompanying drawings—

Figure 1 is a plan view of one truck of a railroad-car, showing one mode or arrangement of mechanism by which our invention may be carried out.

Figure 1' is a similar view, showing another mode or arrangement of mechanism by which our invention may be applied.

In the former, the two trucks are shown as standing or running on a straight track, and therefore in the positions which each will assume.

Figures 2 and 2' are similar views of corresponding trucks, standing or running on a curve of said track, and the movable parts are in the position each will assume at the time.

Figure 3 is a longitudinal vertical section of the trucks shown in fig. 1, the section being taken on the plane of the line X\* in said fig. 1.

Figure 4 is a side elevation of the trucks shown in fig. 1.

Figure 5 is a plan or top view of one wheel, its axle, and two journal-boxes, the inner box having its cap removed, to show its inner construction.

Figure 6 is a partly sectional and partly vertical view of the box, the section being taken as low down as the line X\* X\*, figs. 5 and 6.

Figure 7 is an inverted plan view of the caps of the said inner journal-box.

Figure 8 is a plan or top view of a traction-bar, so named, for connecting two four-wheeled cars and operating them in a similar manner as the above-named eight-wheeled trucks.

In the description of the drawings of the mechanism, the same letters refer to the same parts from fig. 1 to fig. 8, inclusive.

In fig. 2, *a a* represent the axis of the pivot-boxes *G'* for the axles of the wheels *e*, which stand on the outside rail *A*, and

*b b* the axis of similar boxes for the axles of the wheels which stand on the rail *B*, and

*g* represents that portion of the boxes *F'* to which one end of the connecting-bars *j* are hinged and in which the inner journals of the axles *f* have their bearings, the other end of bars *j* being jointed to the arms or levers *k*, which, in turn, are pivoted to the truck-frames at and by the pins *l*.

The movable axle-boxes *g g* rest upon the plates or castings *m*, which are bolted to the beam or beams *n* of the truck-frames *A' A''*, by the bolts *o* passing through the rollers *p* and posts or rollers *q'*, (see figs. 3, 5, and 6,) and on the part *g* several rollers, *r r*, are enclosed by the cap *i*, the rollers *p* being intended to confine the axles in their places and avoid the necessity of oiling any part except the journals of the axles *f*, and the rollers *r r* are to lessen the friction consequent upon the pressure against the cap, *i*.

In fig. 3, *s* represents a portion of the bar which connects the centre-bolts of the trucks *A' A''*. The whole bar is seen in figs. 1 and 1', and 2 and 2', by the dotted lines enclosing the letter *s*, and which extends from *D* to *E*, and it always coincides with the chord-line to a circle, as shown by *D E* in figs. 2 and 2', when the trucks are describing a curve.

There are several modes of connecting the levers *k* to the bar *s*, two of which are shown, as will be seen by reference to figs. 1 and 1', 2 and 2'.

In the arrangement shown by figs. 1 and 2, in addition to the arms *k*, there are two arms, *t*, which are jointed at the centre of the truck, directly under the centre-bolt *D*, and also an arm, *u*, projecting toward the truck *A''*.

This arm *u* may be secured to the bar *s* at the point *v*, by a pin or other device, or it may be constructed with a slot, and secured to the bar *s*, nearer to the pin



l, to cause the arm *u* to vary the angles of deflections of the axles, as herein described.

In the other arrangement, figs. 1' 2', in addition to the arms *k*, there may be two arms, *t t*, which connect at *w*, but the arm nearest the bolt *E* may be dispensed with by connecting the other to the bar *s*, at *w*.

The last-described arrangement differs from the first by its not affording the adjustment to vary at pleasure the angles of deflection of the axles, as by lever *u* in truck *A*'.

It is obvious that when two trucks (having the arrangements of their movable parts, as herein described and proportioned) move upon the curves of a road, that the movable parts must assume positions analogous to those shown by figs. 2 and 2'. Hence it is practicable to cause either of said trucks to tend to describe curves of less radii than the ones over which they are passing, and for the reason that the chords and arcs pertaining to such small angles of deflection are very nearly equal to each other. Therefore, if the angles of deflection are calculated so as to tend to describe a curve of a lesser radius than that of the smallest curve of any given railroad, it follows that they must tend to describe curves of lesser radii than those pertaining to curves of greater dimensions.

It is obvious, therefore, that this property in the motion of a car, which results from the convergence of the axles to a point nearer to the cars than the centres of the curves themselves, gives great advantage over the parallel system, in which the axles of a truck never point to a common centre, and in which the truncated shape of the tread of the wheels by their vibrations and impingement against both rails, oftener tend to fly in a tangent than to follow the curves of the road.

Another advantage is that the outside, or impinging-wheels, will have their flanges turned away from the rails, so as not to bear against them at a point in advance of a perpendicular line let fall from the centre of the pivot-boxes; and therefore the wheels cannot mount the rails, nor the flanges strike their projecting ends, while at the same time it has a diminishing tendency working against the centrifugal force.

Any two adjacent car-trucks, not under one body, or four-wheeled cars, may be connected and operated by a bar similar to the traction-bar *D E*, and it is proposed to so connect them by a bar, fig. 8, *H'*, in which the arms *k* answer the same purpose as the arms *k* in

the figures previously described, but with the exception that these arms are not rigidly secured to the bars *s s*, which are jointed in the middle by the bolt *H*.

The parts *s s* are made with a slot on one end, and fitted to a short and stout lever, *y*, and allowed to slide upon said lever by the spring *z*, so that said bar *H'* may serve the purpose of a traction-bar, to connect different cars in a train, and especially four-wheeled short-axled cars, to answer a purpose similar to that described and applied to eight-wheeled cars.

We do not, however, limit our invention to apply merely to four and eight-wheel cars and trucks, but it may be with equal advantage applied to six-wheeled trucks, in which the centre pair of wheels may have but one axle and the remaining two sets of wheels have short ones.

What we claim as our invention, and desire to secure by Letters Patent, is—

1. The arrangement of a traction-bar in such a manner as to operate upon the centre bolts, or upon two other points lying between the forward and back axles of a truck-frame or car-body, substantially as and for the purposes herein specified.
2. The adjustable lever *u*, attached to a traction-bar, or the centre-beam of a car-body, substantially as and for the purposes specified.
3. The combination of the traction-bar *s*, lever *u*, arms *k k*, and levers *j*, jointed to the vibrating-boxes *g*, for the purpose specified.
4. The combination of lever *t*, provided with arms *k k*, with traction-bar *s*, arms *j j*, and boxes *g*, for the purposes herein set forth.
5. The pivot-box, constructed with circular sides, and arranged so as to be supported laterally against the planes or sides of pedestal-frames, substantially as described.
6. The combination of the rollers *p p* and vibrating boxes *g*, for the purpose specified.
7. In combination with the members of the preceding claim, the pressure-rollers *r r*, as specified.
8. A traction-coupling bar, *H'*, for uniting adjacent cars, and operating substantially as herein specified.

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