R. M. COSBY.

Car Truck.

No. 231,011. Patented Aug. 10, 1880.

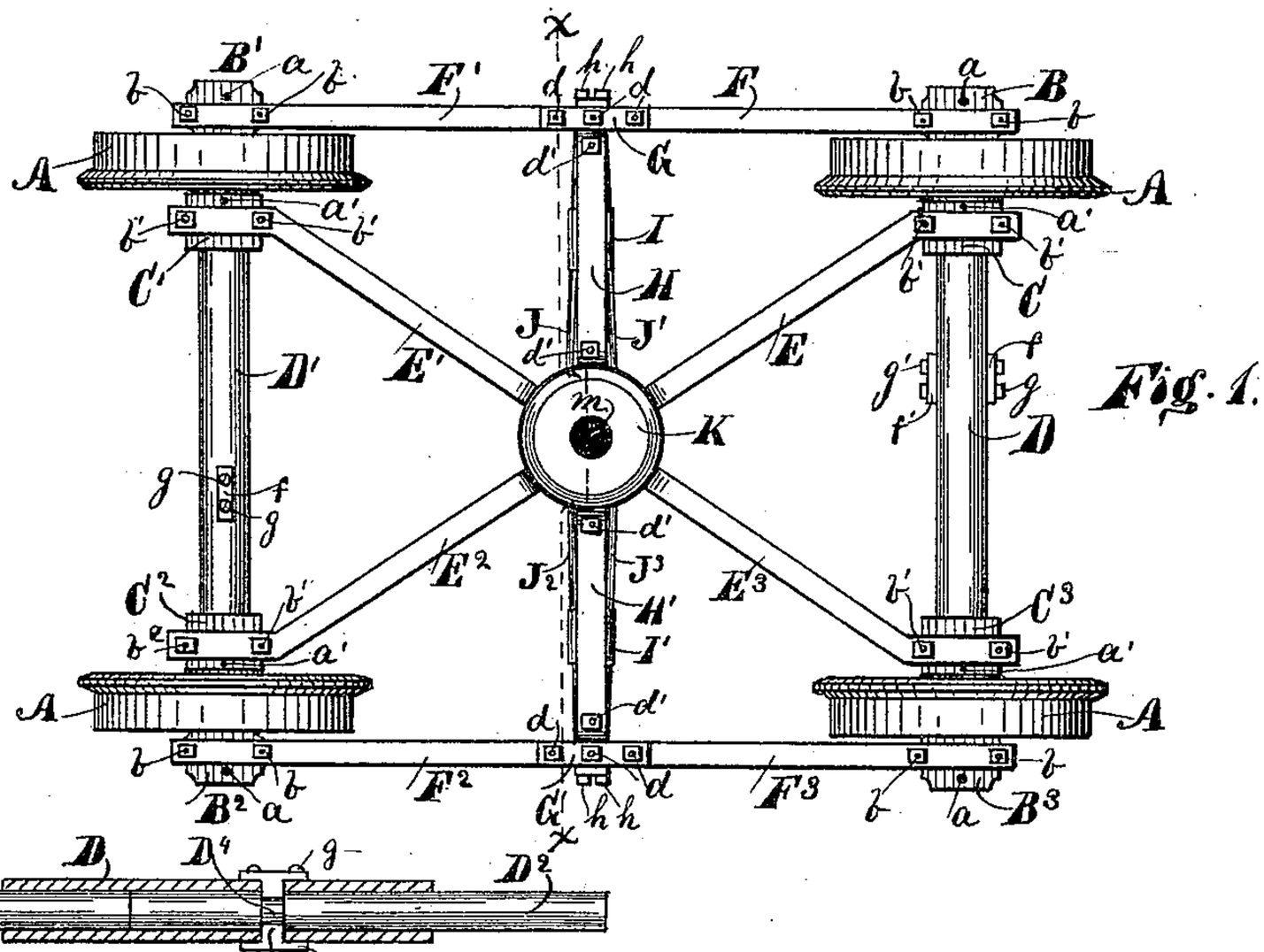

Fig. 1.

Fig. 5.

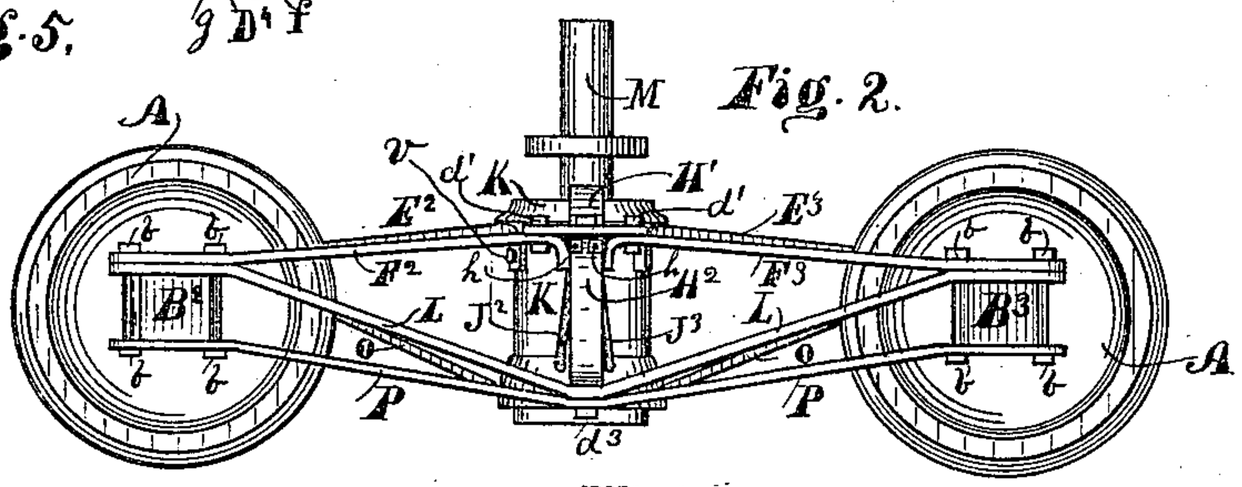

Fig. 2.

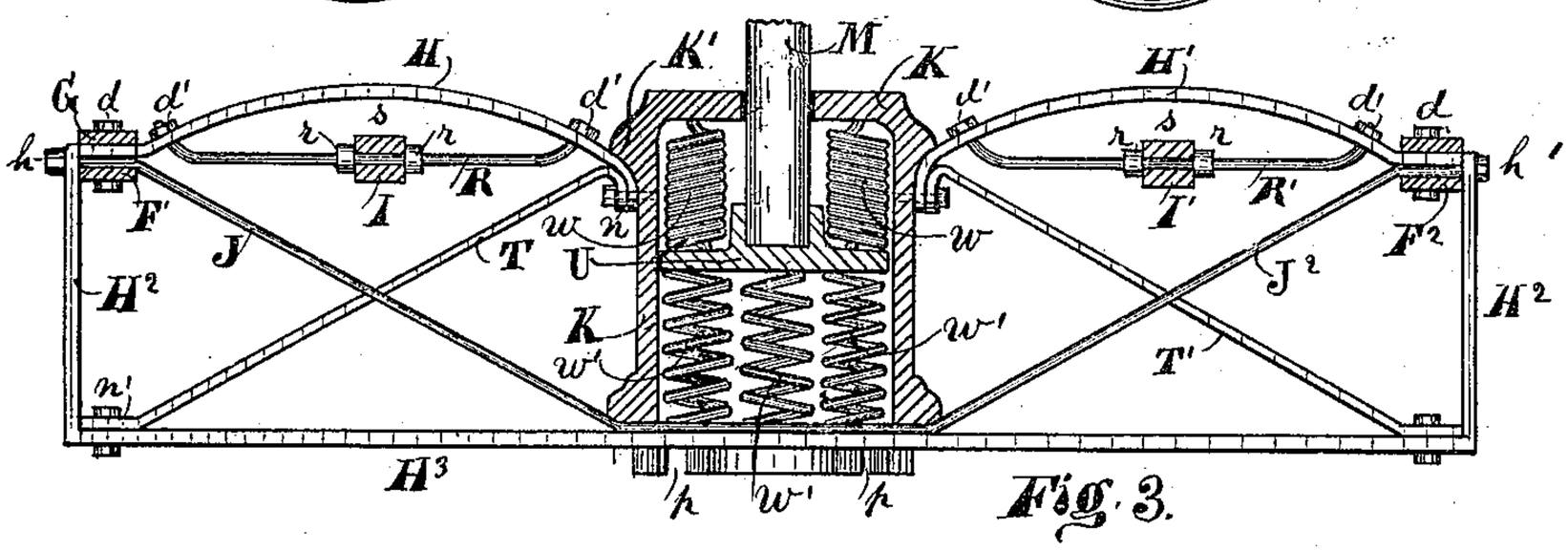

Fig. 3.

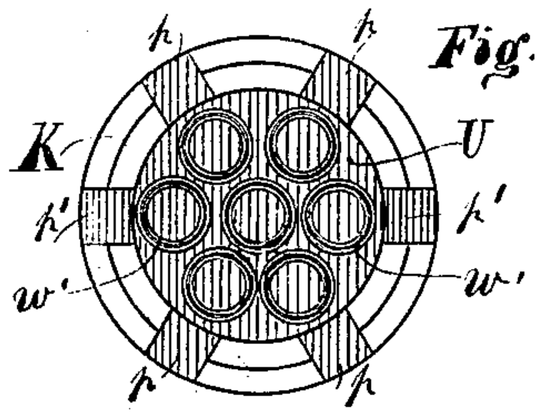

Fig. 4.

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UNITED STATES PATENT OFFICE.

RICHARD M. COSBY, OF INDIANAPOLIS, INDIANA.

CAR-TRUCK.

SPECIFICATION forming part of Letters Patent No. 231,011, dated August 10, 1880.

Application filed February 26, 1880.

To all whom it may concern:

Be it known that I, RICHARD M. COSBY, of Indianapolis, in the county of Marion and State of Indiana, have invented a new and useful Car Truck and Frame, of which the following is a specification.

My invention relates to improvements in a device for supporting and holding car-trucks, in which the trucks and axles are supported by the frame and the frame operates in conjunction with the car-bed; and the objects of my invention are, first, to provide a metallic frame of great strength for supporting and holding in position the car trucks and axles; second, to provide a means of distributing the load equally on each of the wheels of the truck-frame; third, to provide a means for preventing the car-trucks from leaving the track where rails are broken; fourth, to provide means for preventing the trucks from being slued around under the car; fifth, to provide a means for holding three wheels on the track while any one of the four wheels is passing over low joints or broken rails; sixth, to provide a means for holding the truck-frame, and preventing any one wheel from dropping below the head of the rail while passing over broken rails; seventh, to afford facilities for preventing the slipping of the wheels on the track while running around curves. These objects I attain by the mechanism illustrated in the accompanying drawings, in which—

Figure 1 is a plan or top view of the device. Fig. 2 is a side elevation of the same. Fig. 3 is an enlarged vertical cross-section taken at the line *x x* of Fig. 1. Fig. 4 is a bottom view of the central cylinder; and Fig. 5 is a detail view, in section, of the axle.

Similar letters refer to similar parts throughout the several views.

The truck-frame is of peculiar construction, as follows, to wit: In the center of the frame, and forming the main support for all its various parts, is a vertical cylinder, K, of an external and internal construction similar to that shown —*i. e.*, the cylinder is hollow and provided with a cap which is cast or otherwise made fast thereon. Through the center of this cap is a hole, in which the king-bolt or stud M is inserted. The lower end of the king-bolt or stud M rests in a socket formed in the upper side of the disk-plate U. The disk-plate U fits loosely in the cylinder K and rests on several spiral or other springs, *w' w'*, which are, in turn, supported by the lower cross-bars of the truck-frame, or on a plate located above said cross-bars. The disk U may be further strengthened to resist a downward pressure by having a series of spiral pull-springs, *w*, attached to its upper side, and also secured to the cap of the cylinder K, as shown in Fig. 3.

The flange K' around the upper edge of the cylinder K projects some distance from the body of the cylinder, and is designed to form a shoulder for supporting and distributing the weight of the cylinder and load on the braces and bars of the frame.

The lower edge of the cylinder is provided with several radial notches, *p*, for holding and retaining in position all the braces and bars of the frame which pass under said cylinder. The upper frame-bars, E E' E^2 E^3, are each secured to the cylinder K immediately under the flange K', as shown at *v*, Fig. 2, each bar radiating from the cylinder K, as shown in Fig. 1. The outer ends of each of these bars are bent to form a bearing on the ends of the brace-bars O below, which rest on the upper side of the inside bearing-boxes, C C' C^2 C^3. To the under side of each of these inside bearing-boxes, C, are also fitted the bent ends of lower brace-bars similar to the bars P P at the sides, as shown in Fig. 2. The lower bar, that is located under the bars E E^2 and brace-bars O, is secured at one end to the bar E, with the inside bearing-box, C, between them, by the bolts *b' b'*. The lower bar, as well as the brace-bars O, extends across under the cylinder K in one set of slots, *p*, and their other ends are secured to the end of the bar E^2, with the box C^2 between them, by the bolts b^2 b^2. The other lower bar and its brace-bars also pass under the cylinder K, and are secured to bars E' E^3, with the inside bearing-boxes, C' and C^3, between them, by bolts in the same manner, thus forming diagonal braces and supports for the inside bearing-boxes, C C' C^2 C^3, and the cylinder K, in the same manner as the side parallel bars.

Under the cylinder K, and supported in the recesses *p' p'*, is a cross-bar, H^3, Fig. 3, which extends across from side to side of the frame,

midway between the trucks. The outer ends of this cross-bar H^3 are secured to the lower parallel side bars, P P, of the frame on each side, with the brace-bars L L between them, Fig. 2. The vertical ends H^2 of the bar H^3 may form a part of said bar or be attached thereto. These vertical side bars, H^2, extend upward, and are made fast to or form part of the arch-bars H H′, Figs. 1 and 3, the inner ends of said arch-bars being secured to the cylinder K below the flange K′. These bars H H′ H^2 H^3 are also braced by the diagonal brace-bars T T′, the upper ends of which are secured to the cylinder K below the flange K′ and below the bent ends of the bars H H′, as shown at *n*, Fig. 3, and the lower ends are firmly secured at the angles of the bar H^3 with the vertical bars H^2, as shown at *n′*.

The said bars H H′ H^2 H^3 are further braced and strengthened by the rods J J′ J^2 J^3, the rod J J^2 being one rod and J′ J^3 the other rod. These rods pass across the under side of the cylinder K in the same notches *p′ p′* that the bar H^3 is held in, one on each side of said bar H^3. The end J of one rod extends diagonally upward from the base of the cylinder K, and passes through a hole or recess formed in the upper parallel side bar, F′, also through a hole formed in the upright bar H^2, and is made fast by the nut *h*. The other end, J^2, of the rod extends in like manner through the other upright bar, H^2, where it is made fast by the nut *h′*. Each arch-bar H and H′ is provided with a rod, R, which runs parallel therewith and forms a cord to the arch. Each end of this rod passes through holes formed in the arch-bar, and is there secured by the nuts *d′ d′*. The rods R R′ are each provided with collars *r r*, between which is located a friction-roller, I, and the space *s* between said rollers and the arch H is designed to receive a plate of iron, (not shown,) which is secured to the car-bed above on each side of this arch, and forms a safety device for preventing the trucks from being detached from the car-bed, and to relieve the friction on the iron plate. (Not shown.)

The outside parallel side bars and braces are as follows, referring to Figs. 1 and 2: The upper bar, F^2 F^3, is secured at its middle to the vertical side bar, H^2, with a cap, G, above, by the bolts *d*. The outer ends of this bar F^2 F^3 are fitted to rest on the outer ends of the brace-bar L L, over the outside bearing-boxes, B^2 B^3. The brace-bar L L extends from the top of the boxes B^2 B^3 diagonally downward and under the vertical bar H^2. The lower bar, P P, is secured at each end to the bars L L and F^2 F^3, with the boxes B^2 B^3 between them, by the bolts *b*, as shown in Fig. 2.

The opposite parallel side bars of the frame are of like construction and arrangement and secured to the outside bearing-boxes, B B′, in the same manner as that just described.

The axles D are of peculiar construction, as follows, to wit: The part D is a tube, in which the spindle D^3 is made fast, and in which the spindle D^2 revolves. The revolving spindle is held in place by the groove D^5 and the feathers D^4 on the blocks *f*, which are secured to the pipe D by the screws *g g*, as shown in Figs. 1 and 5. The spindles D^2 D^3, beyond the pipe D, operate in the inside bearing-boxes, C C′ C^2 C^3, outside of which the truck-wheels A are secured to said spindles, and outside of the trucks the spindles project far enough to enter the outside bearing-boxes, B B′ B^2 B^3, as shown in Fig. 1.

By this arrangement of the wheels and axles each wheel is free to revolve independent of the other, thus preventing the slipping of wheels in running around curves.

Having thus described the construction and arrangement of parts in my improved truck-frame, I will now describe its mode of operation as follows, to wit: The king-bolt or stud M is inserted in the cylinder and its lower end resting on the disk U. The truck-frames are then ready to be placed under a car, the upper ends of the king-bolts or studs M being inserted in their respective bolster. When in this condition all the weight of the car is on the king-bolts or studs M, supported by the springs *w w′* in the cylinder K at the center of the frame. Thus each wheel receives an equal amount of weight, and neither one of the wheels can drop below the level of the others unless both wheels on one axle leave the track at one and the same time. In passing over broken rails the two wheels at one side of the truck-frame and one on the other side are always on the good track while one wheel may be passing over the break. As soon as the one wheel is over the break and reaches good iron then the other wheel on the same side can pass the break also in like manner, the truck-frame being supported by three wheels on the track while one wheel passes the break.

It will be observed that, when the weight is placed in the center and the king-bolt or stud M is strong, it will be almost impossible to let one of the wheels drop below the rest of the wheels, even if any one should leave the track at a broken rail, because the construction of the frame, being so rigid, prevents it from falling, and the weight holds the other three wheels on the rails, provided the break in the rail is not longer than the distance apart of the wheels on one side of the truck.

Again, if the two wheels on one side are on good rails and the wheels on the other side are passing over a broken rail, the wheels cannot fall into the break and encounter obstruction that would slue the truck around.

Again, in laying the rails it is customary to break joints, and as the two wheels on one side pass on the rail, then the other wheels pass over the joint in the rail on their side without hammering or battering the ends of the rails.

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

1. In a car-truck frame, the central cylinder, K, combined with the plate U, the springs *w′*,

and king-bolt or stud M, substantially as described, for the purpose specified.

2. In a car-truck frame, the cylinder K, combined with the plate U, the springs *w'* below, the springs *w* above, and the king-bolt M, as and for the purpose specified.

3. In a car-truck frame, the cylinder K, with flange K′ at its top and radial recesses or notches *p* in its bottom, combined with the plate U, the springs *w'*, the king-bolt or stud M, and the frame and brace-bars radiating therefrom, substantially as specified.

4. In a car-truck frame, the cylinder K, combined with the bar H^3, the upright bars H^2 H^2, and arch-bars H H′, as shown, for the purpose specified.

5. In a car-truck frame, the cylinder K, combined with the bar H^3, the upright bars H^2 H^2, the arch-bars H H′, and the diagonal brace-bars T T′, as and for the purpose specified.

6. In a car-truck frame, the cylinder K, combined with the bar H^3, the upright bars H^2, the arch-bars H H′, and the rods R R′, provided with friction-rollers I I, as and for the purpose specified.

7. In a car-truck frame, the cylinder K, combined with the bar H^3, the upright bars H^2, the arch-bars H H′, the upper side bars, F F′ F^2 F^3, and the rods J J′ J^2 J^3, as and for the purpose specified.

8. In a car-truck frame, the cylinder K, combined with the radial bars E E′ E^2 E^3 and their corresponding bars and braces below, the bar H^3, the upright bars H^2, the arch-bars H H′, and the side bars, F F′ F^2 F^3, the brace-bars L, and lower side bars, P P, as and for the purpose specified.

9. In a car-truck frame, the cylinder K and its frame-work and braces, combined with the inside bearing-boxes, C C′ C^2 C^3, and outside bearing-boxes, B B′ B^2 B^3, substantially as described, for the purpose specified.

10. In a car-truck frame, the cylinder K and its frame-work and braces, combined with the inside and outside bearing-boxes, C C′ C^2 C^3 B B′ B^2 B^3, and the axles D D′, with wheels A, as and for the purpose specified.

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

RICHARD M. COSBY.

Witnesses:

E. O. FRINK,

G. H. RENNETT.