No. 620,092. Patented Feb. 28, 1899.

J. C. BARBER.

CAR TRUCK.

(Application filed Nov. 20, 1897.)

(No Model.) 3 Sheets—Sheet 1.

Fig. 1.

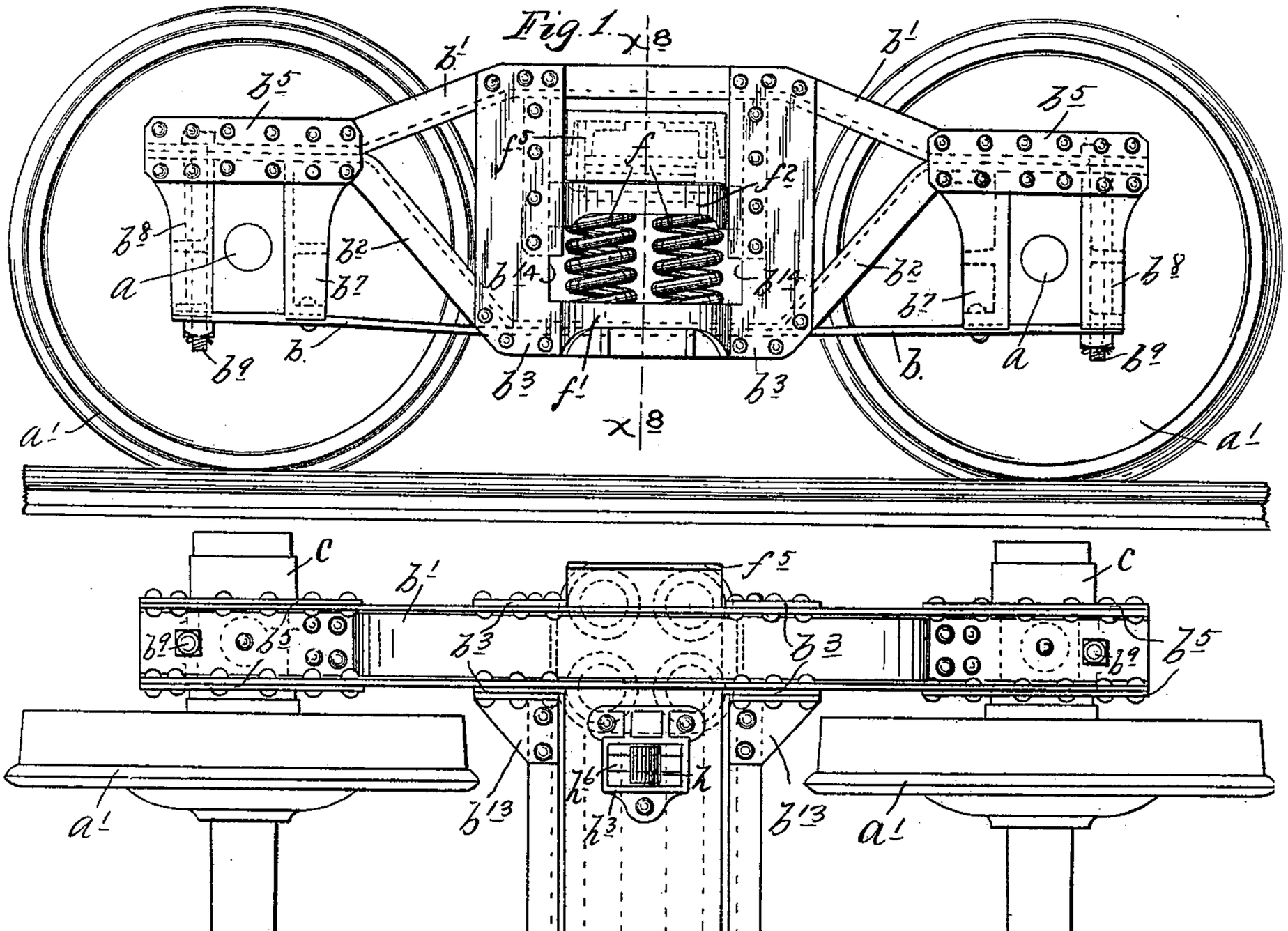

Fig. 2.

Witnesses.
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Inventor.
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By his Attorney.
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3 Sheets—Sheet 2.

Fig. 3.

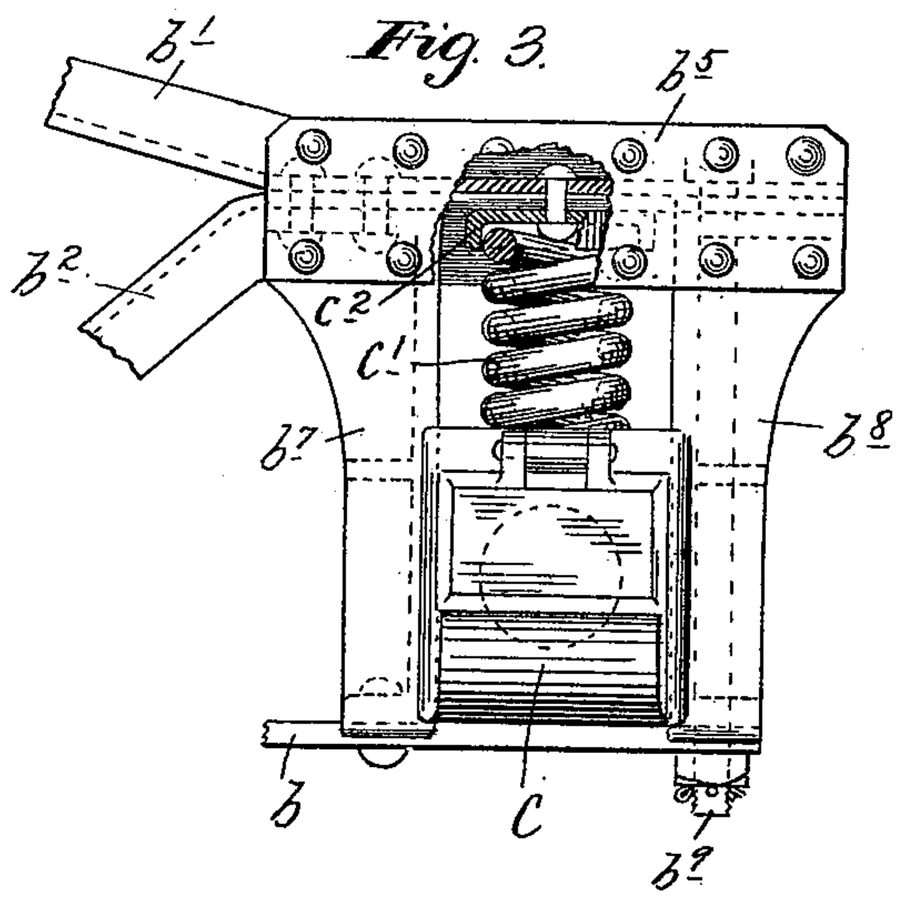


Fig. 4.

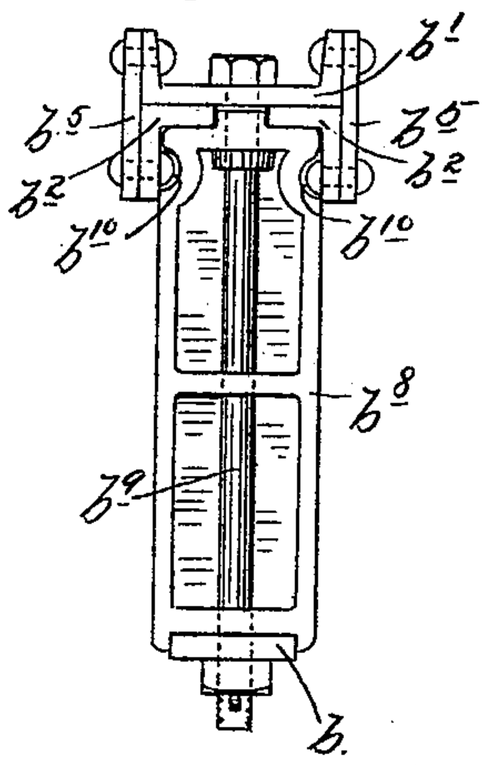
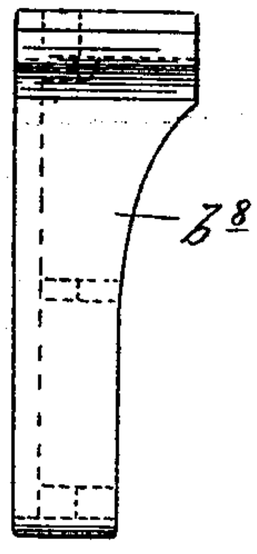


Fig. 5.



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3 Sheets—Sheet 3.

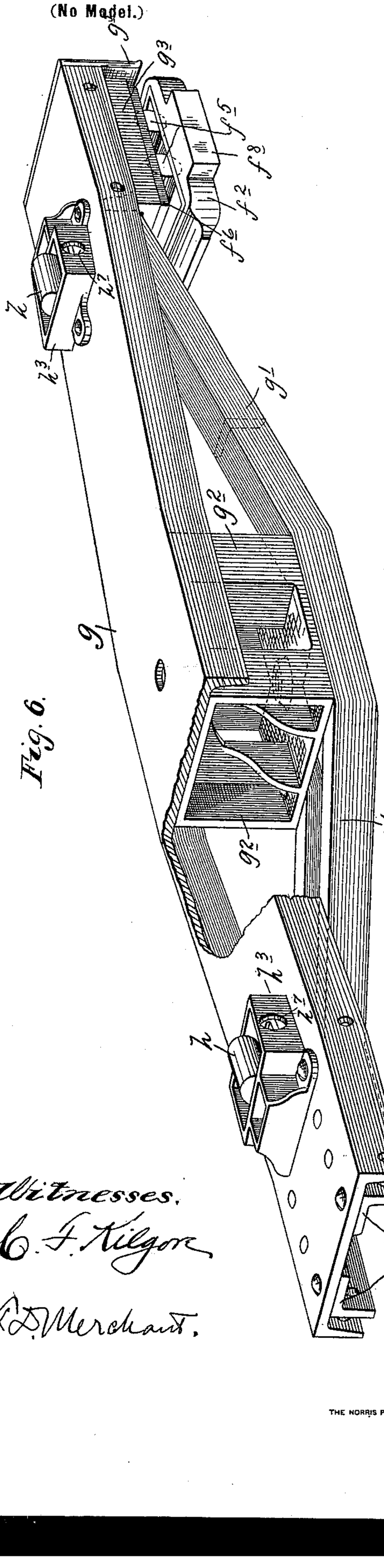

Fig. 6.

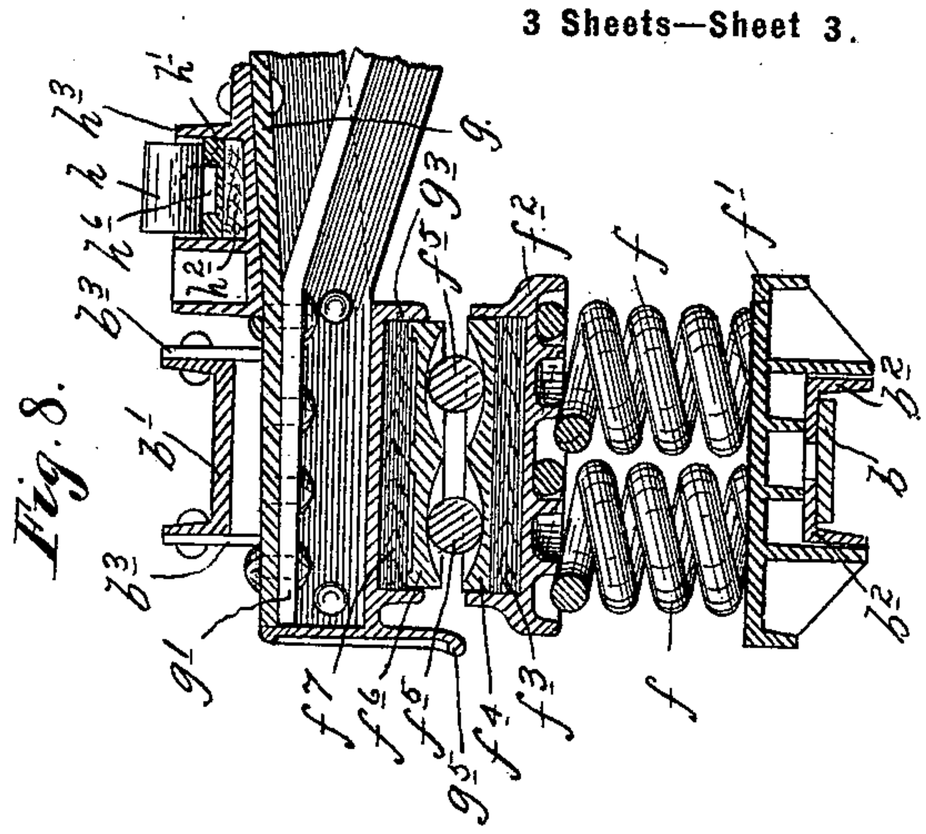

Fig. 8.

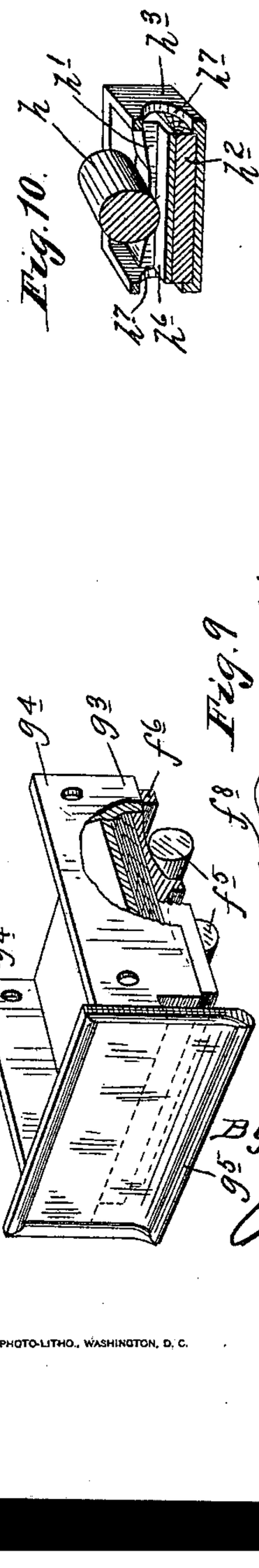

Fig. 10.

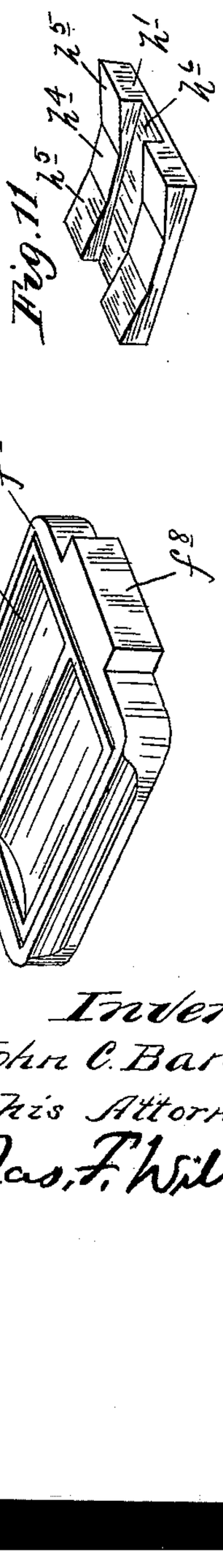

Fig. 11.

Fig. 7.

Fig. 9.

Witnesses.

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UNITED STATES PATENT OFFICE.

JOHN C. BARBER, OF ST. PAUL, MINNESOTA.

CAR-TRUCK.

SPECIFICATION forming part of Letters Patent No. 620,092, dated February 28, 1899.

Application filed November 20, 1897. Serial No. 659,242. (No model.)

To all whom it may concern:

Be it known that I, JOHN C. BARBER, a citizen of the United States, residing at St. Paul, in the county of Ramsey and State of Minnesota, have invented certain new and useful Improvements in Car-Trucks; 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 appertains to make and use the same.

My invention relates to car-trucks, and has for its object to improve the construction with a view of increased efficiency.

To these ends my invention consists of the novel devices and combinations of devices hereinafter described, and defined in the claims.

The invention is illustrated in the accompanying drawings, wherein like notations refer to like parts throughout the several views.

Figure 1 is a side elevation of my improved truck with some parts removed. Fig. 2 is a plan view of the same with some parts shown in horizontal section and others broken away. Fig. 3 is a detail in side elevation with some parts broken away for showing the relation of the pedestals to the parts of the side frame, journal-box, &c. Fig. 4 is a detail giving an end view of some of the parts shown in Fig. 3. Fig. 5 is a detail showing the outer pedestal removed in side elevation. Fig. 6 is a perspective view with some parts broken away, showing my improved bolster and some other parts. Fig. 7 is a detail in perspective showing one of the bolster end castings detached. Fig. 8 is a vertical section through a part of the truck on the line x^8 x^8 of Fig. 1. Fig. 9 is a detail showing one of the roller-bearing plates detached. Fig. 10 is a sectional perspective showing parts of one of the side bearings, and Fig. 11 is a detail in perspective showing one of the bearing-plates for the side bearing-rollers detached.

With the exception of the springs and the rollers all the parts of this improved truck-frame are made up of pressed-steel forms and malleable castings, and wherever possible these parts are of the channel or angular form.

a a' indicate, respectively, the axle and the wheel of the truck. The side frames are made up of the bottom bar b, the top or arch bar b', and the truss-bar b^2, disposed in respect to each other, as best shown in Figs. 1 and 2, with the members b' and b^2 rigidly secured together on the opposite sides of the bolster-space by the vertical tie-plates b^3 and the bolster-columns b^4. The columns b^4 are of channel form, set between the said bars b' and b^2, and are embraced by the tie-plates b^4, with all the said parts shown as riveted together and the columns set far enough outward to permit the inner edges of the tie-plates b^3 to serve as the vertical guides for the roller-bearing plates, as will presently more fully appear. At their ends the bars b' b^2 are also tied together by side plates b^5, which are shown as riveted thereto. The pedestals b^7 b^8 are malleable castings, and the inner members b^7 are shown as riveted at their upper ends to the bars b' b^2 and the side plates b^5 and at their lower ends to the bottom bar b. The outer pedestals b^8 are removably secured in working position by suitable bolts b^9, which pass through the same and through the three bars of the side frame. These outer pedestals b^8 are properly shaped, as shown at b^{10}, to clear the rivets connecting the bars b' b^2 and the side plates b^5 when being inserted in or removed from their proper working position. This arrangement of the pedestals permits the car-axles to be rolled into position in respect to the side frames, with the journal-boxes c thereon, when the outer pedestals b^8 are removed. The said outer pedestals b^8 are then applied, and all the parts will then be held in working position. The end springs c' react between the journal-boxes c and suitable caps c^2, shown as riveted to the bars b' and b^2. The opposite side frames are connected by transoms b^{11} of channel-bar form, shown as connected to the side frames by angle-irons b^{12} and corner-irons b^{13}, with all of the said parts riveted together.

The bolster-sustaining springs f rest on a base-plate f', which is a malleable casting of the proper form to embrace the side bars b b^2 of the frame between the vertical tie-plates b^3, as best shown in Figs. 1 and 8. On the springs f rests a malleable casting f^2 of the proper form to serve as a spring-cap and to receive and hold a shimming-block f^3 and the bottom bearing-plate f^4 for the rollers f^5. Otherwise stated, the said casting f^2 has a box-like recess

on its upper surface, in which the said parts f^3 and f^4 rest and work, as best shown in Fig. 8. On the rollers f^5 rests an upper bearing-plate f^6, which, together with the shimming-block f^7, works in and is held by an inverted box-like plate g^3, forming a part of the bolster end casting g^3 g^4 g^5, as best shown in Figs. 6, 7, and 8. The rollers f^5 are of cylindrical form, and the bearing-surfaces for the same on the plates f^4 and f^5 are shown as of concave form for causing the rollers to center under the action of gravity. The casting f^2 has end guide-lugs f^8, (shown best in Fig. 9,) which are held and guided by the projecting edge of the pairs of vertical tie-plates b^3, as shown in Figs. 1 and 2. The said plates b^3 are cut away, as shown at b^{14} in Fig. 7, to permit the insertion and removal of said casting f^2. The main or body member g of the bolster is an inverted and cambered channel-bar of pressed steel. The truss members g' are angle-bars of pressed steel, and the strut g^2 is a malleable casting of skeleton form. The parts g and g' are properly shaped to permit the same to lap and be rigidly connected together for a considerable distance inward of the outer end of the bolster. The said parts g g' are riveted together throughout their lapping sections and the truss members g' are spaced apart from the down-flanges of the body member g sufficiently far to receive the side members g^4 of the bolster end castings. When the said end castings are thus applied, the parts g^5 thereof will abut against the outer ends of the bolster members g g', as best shown in Figs. 6 and 8. When the end castings are thus in proper position, the parts g^4 thereof are riveted or otherwise rigidly secured to the members g g' of the bolster. With the parts constructed and arranged as described it is obvious that a bolster of great strength is secured. The angular form of the truss members g' greatly increases the strength of the bolster for any given mass or weight of material. The lapping of the main member g and the truss members g' for a considerable distance inward of the outer end of the bolster affords great strength at that point and brings the trussing action or support from the trusses at the point most needed in reference to the load.

The above-described bolster works, of course, between the transoms b^{11}, with its outer ends working on the rollers f^5 and sustained by the spring f. It is therefore free for a limited lateral movement on the said rollers and will return to center under the action of gravity.

The plates g^5 of the bolster end castings extend downward below the bearing-box g^3, so as to overhang the space between the two bearing-plates f^4 f^6 outward of the rollers f^5. This downward extension of the said plates g^5 serves as a guard to exclude more or less dust, sand, and dirt, which would otherwise be thrown in onto the said bearing-plates for the rollers. The bolster is provided with suitable side bearings, which, as shown, comprise cylindrical rollers h, bearing-plates h', shimming-blocks h^2, and box-like castings h^3, rigidly secured to the face of the bolster. The bearing-plates h' and the shimming-blocks h^2 are removably held by the box-like castings h^3, with the block h^2 under the bearing-block h', as best shown in Fig. 10. The bearing-surfaces on the plate h' for the roller h are shown as made up of flat central sections and inclined side sections extending therefrom, as shown at h^4 and h^5 in Figs. 10 and 11. With this disposition of the said surfaces h^4 and h^5 the rollers h will return to center under the action of gravity in the same way as the main rollers for the bolster work on their concave surfaces in their bearing-plates f^4 and f^6. It is obvious, therefore, that the concave and the inclined surfaces are interchangeable or capable of the same functions. The bearing-plates h' for the side bearing-rollers h are shown as provided with a central groove or depression h^6 running crosswise of the bearing-surfaces and extending lengthwise of the car. The castings h^3 are also provided with end openings h^7, which register with the ends of the groove h^6 when the parts are in working position. This construction affords a draft-passage for the currents of air when the car is in motion, and the air thus moving through the passage-way h^6 h^7 will blow out whatever dust or dirt may fall therein under the action of the wheels or from other causes. Hence by this construction the accumulation of dust, sand, or dirt on the bearing-plates h' for the side bearing-rollers h will be prevented.

It will be noted that shimming-blocks have been shown as applied at several different places. This has been done to make clear that shimming-blocks may be differently located and nevertheless be made to serve the functions desired therefrom. It will therefore be understood that more or less of the said shimming-blocks might be dispensed with. For example, the requisite adjustment could be secured either by the shimming-blocks f^3 alone or the blocks f^7 alone. The shimming-blocks are shown as if made of wood, which would be the preferred material; but they might of course be made of metal.

It will be understood, of course, that the details of the construction may be changed without departing from the spirit of my invention.

What I claim, and desire to secure by Letters Patent of the United States, is as follows:

1. In a car-truck, a side frame having its arch-bars, truss-bars and bolster-columns of channel form, and provided with vertical tie-plates rigidly securing together said arch-bars, truss-bars and bolster-columns, substantially as described.

2. In a car-truck, a side frame having its arch-bar, truss-bar and bolster-columns of channel form, and provided with vertical tie-plates rigidly securing all of the said parts

together and projecting inward of the columns to afford guides for the spring-cap, substantially as described.

3. In a car-truck, a side frame having arch-bars and truss-bar and bolster-columns of channel form, having vertical tie-plates rigidly securing together all of the said parts and provided with side plates which rigidly secure together the lapping ends of the arch and the truss bars, substantially as described.

4. In a car-truck, the side frames composed of the bottom bars b, arch-bars b', truss-bars b^2, bolster-columns b^4, vertical tie-plates b^3, side plates b^5 and the pedestals b^7 b^8, with all of the said parts arranged and operating, substantially as and for the purposes set forth.

5. In a car-truck, the side frames having the bottom bars b, the arch-bars b', the truss-bars b^2, the bolster-columns b^4 and the tie-plates b^3, with the said parts rigidly secured together by said tie-plates and the tie-plates extending inward to afford guides for the spring-cap, in combination with the spring base-plate f' resting on the bottom of the truss-bars between the said tie-plates, the springs f and the spring-cap f^2 provided with the guide-lugs f^8 working between the projecting edges of said tie-plates b^3, substantially as and for the purposes set forth.

6. In a car-truck, the combination with the truck-frame and truck-bolster, of roller-bearings and bearing-plates for the ends of the bolster, springs, and spring-caps constructed to also removably hold the lower bearing-plates for the rollers, substantially as described.

7. In a car-truck, the combination with the truck-frame and the truck-bolster, of roller-bearing and bearing-plates, under the ends of the bolster, springs, and spring-caps and shimming-blocks, with the spring-cap constructed to removably hold the shimming-blocks and the lower bearing-plates for the rollers, substantially as described.

8. A truck-bolster having its main or body member composed of an inverted channel-bar of pressed steel, its truss or compression members made up of angle-bars of pressed steel, substantially as described.

9. A truck-bolster having its body or main member composed of an inverted and cambered channel-bar and its truss or compression members composed of angle-bars, with a suitable strut between the two, and said parts so disposed that the body member and the truss members lap for a considerable distance inward of the outer ends of the bolster, substantially as described.

10. A bolster made up of a main or body member of channel-bar form, truss or compression members of angle-bar form, with a suitable strut between the same, and end castings having side plates g^4 adapted to work between the down-flanges of the body member and the truss members and having end plates g^5 adapted to abut against the ends of the body and truss members, with all the said parts rigidly secured together, substantially as described.

11. In a car-truck, a truck-bolster having removable end castings provided with a box-like seat for receiving and holding a removable roller-bearing plate and shimming-block substantially as described.

12. In a car-truck, the combination with a truck frame and bolster, of springs, rollers and roller-bearings for permitting a lateral movement of said bolster, and a guard-plate carried by the bolster and extending downward therefrom, for the exclusion of dust and dirt from the roller-bearing plates, substantially as described.

13. In a car-truck, the side bearings composed of the rollers h, the bearing-plates h' having the groove or depression h^6 crosswise of the bearing-surfaces, and the boxes h^3 provided with the holes h^7 registering with the ends of said grooves or depressions h^6, substantially as and for the purposes set forth.

14. The truck-bolster composed of the main or body member g, of inverted channel form, the truss or compression members g' of angle-bar form, the strut g^2 and the removable end castings composed of the bearing-box g^3, the side plates g^4 and the end plates g^5, all arranged and operating substantially as and for the purpose set forth.

15. In a car-truck, side bearings composed of plain cylindrical rollers and bearing-plates for said rollers having countersunk passages or grooves cut crosswise of their bearing-faces, for permitting the passage of currents of air to keep the bearing-surfaces clear from dust, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

JOHN C. BARBER.

Witnesses:

JAS. F. WILLIAMSON,

EDWARD DENEGRE.