No. 723,755. PATENTED MAR. 24, 1903.

E. W. SUMMERS.

CAR TRUCK.

APPLICATION FILED MAY 13, 1902.

NO MODEL. 2 SHEETS—SHEET 1.

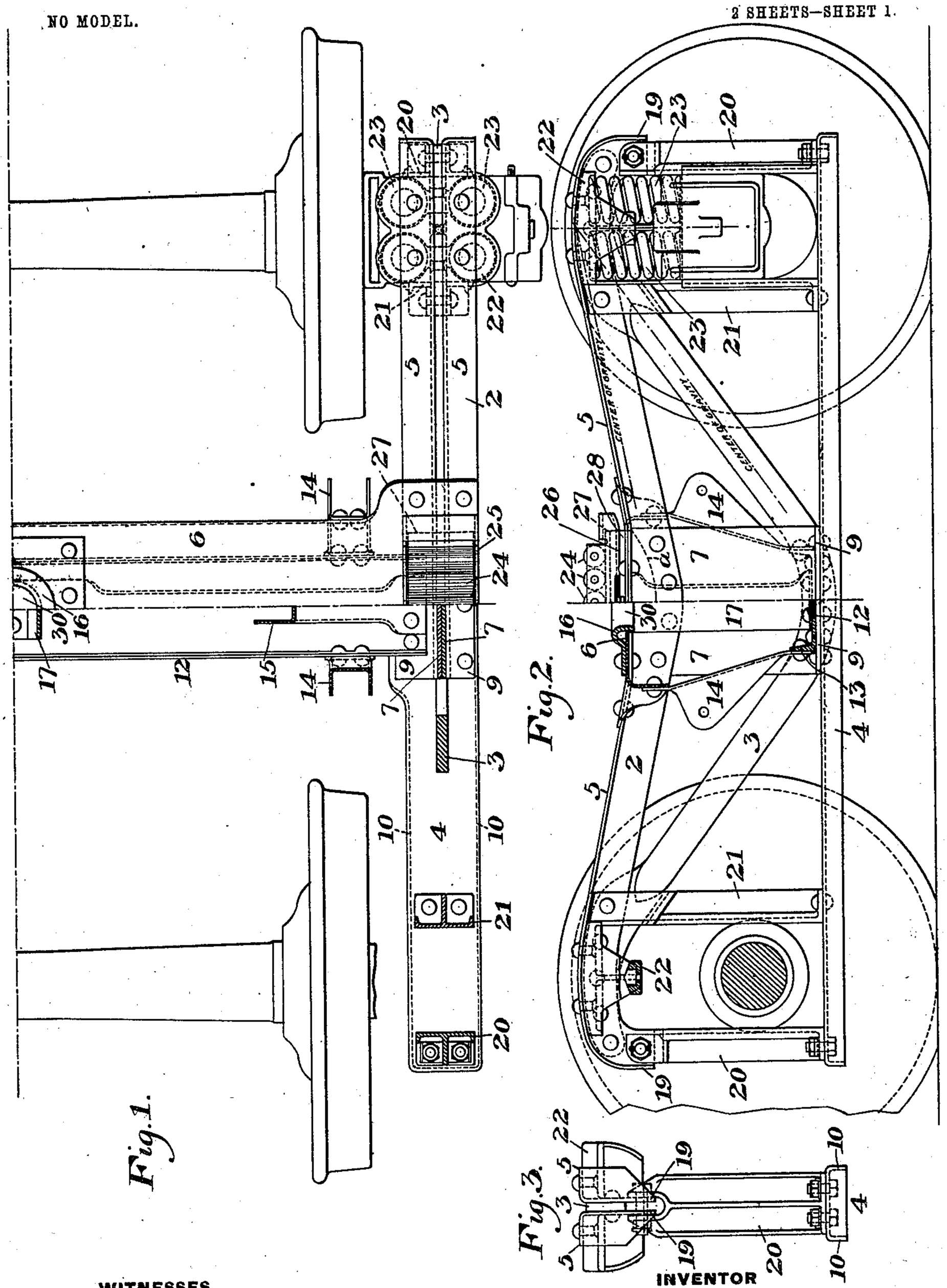

Fig. 1.

Fig. 2.

Fig. 3.

WITNESSES

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NO MODEL. 2 SHEETS—SHEET 2.

Fig. 5.

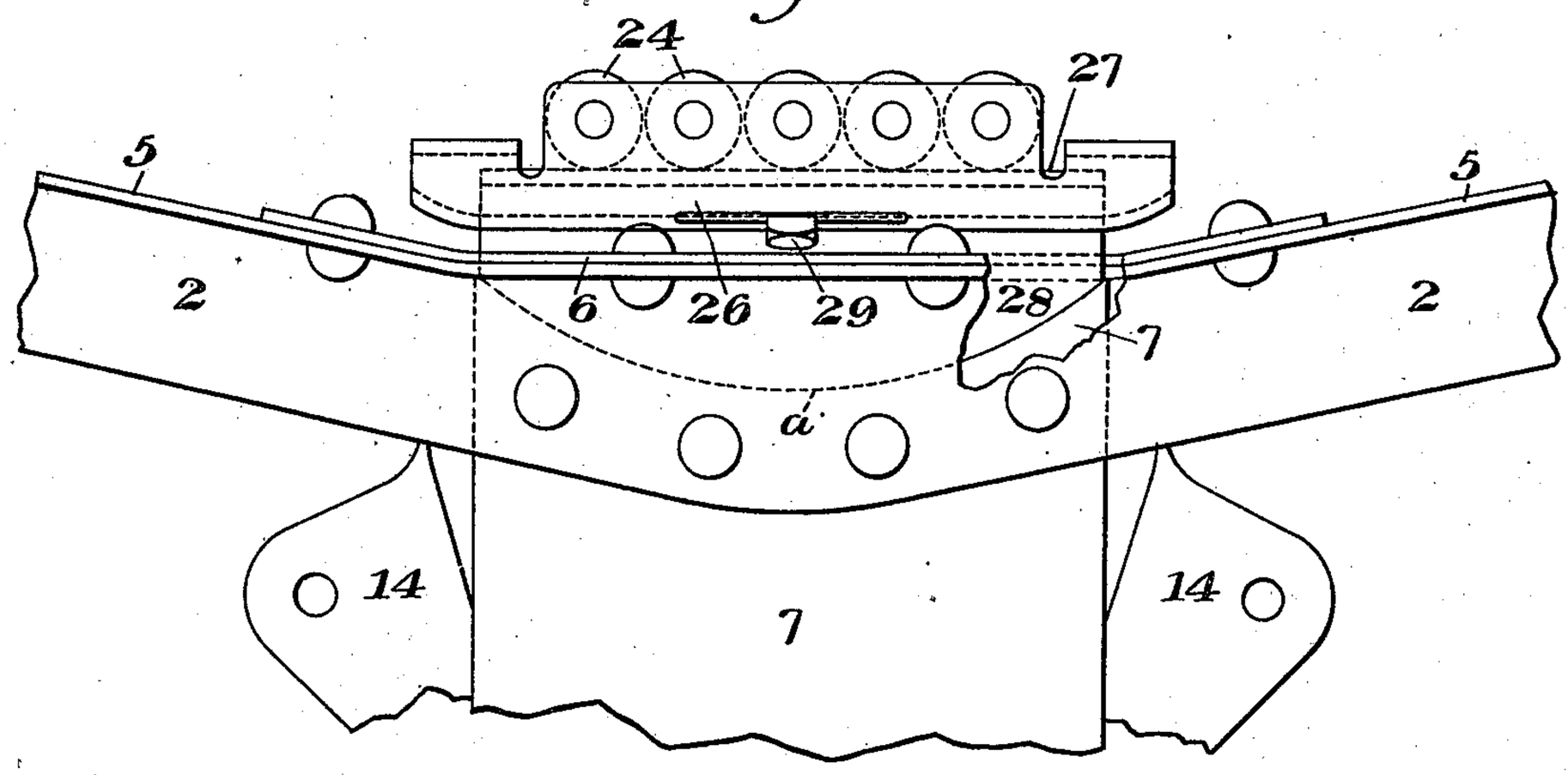
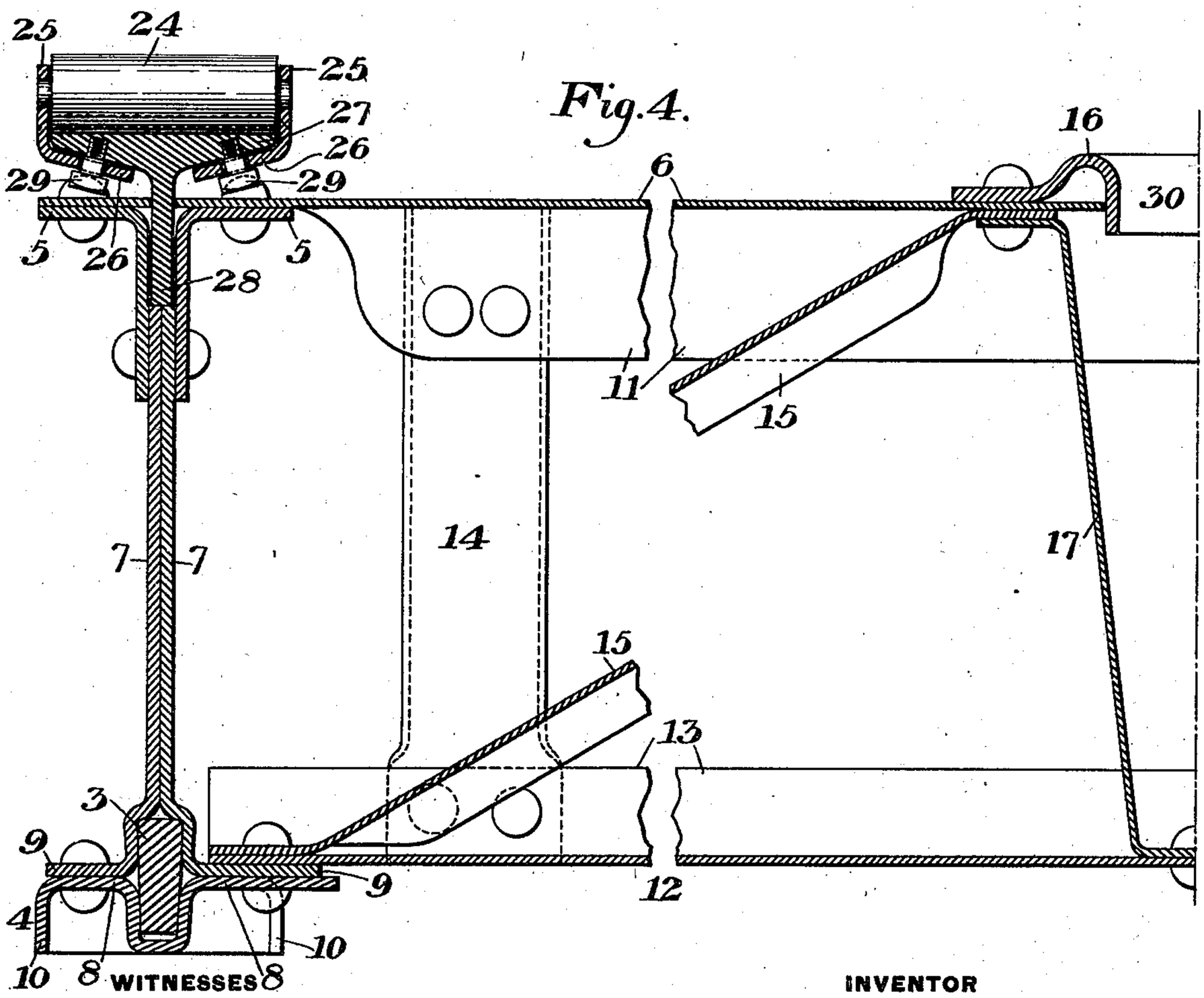


Fig. 4.



WITNESSES

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UNITED STATES PATENT OFFICE.

EDGAR W. SUMMERS, OF YOUNGSTOWN, OHIO.

CAR-TRUCK.

SPECIFICATION forming part of Letters Patent No. 723,755, dated March 24, 1903.

Application filed May 13, 1902. Serial No. 107,080. (No model.)

To all whom it may concern:

Be it known that I, EDGAR W. SUMMERS, of Youngstown, Mahoning county, Ohio, have invented a new and useful Car-Truck, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a top plan view, partly in horizontal section, showing a portion of my improved truck. Fig. 2 is a side elevation of the same, partly in vertical section. Fig. 3 is an end elevation of the side member. Fig. 4 is an enlarged central vertical section longitudinally of the transom, and Fig. 5 is an enlarged side elevation of the roller-bearing.

My invention relates to the class of trucks for railway-cars, and is designed to provide a truck of simple construction which may be made lighter and will support the same or a greater load than the ordinary trucks now used. The bending stress brought upon the members of the ordinary truck is done away with, the stresses being in compression or tension. The center plate does not receive any vertical load, but acts merely as a guide and to receive lateral strains, while the weight is carried on roller-bearings over the vertical center lines of the side members.

In the drawings I show a pedestal-truck having its side members formed with an upper compression member 2, a lower inclined tension member 3, and a bottom horizontally-extending member 4. The member 2 consists of two bent angle-plates, the upper opposite horizontal flanges 5 of which are riveted to the flattened end of the top member 6 of the transom. Between the vertical portions of these angle members are inserted the two web-plates 7 7, whose upper ends are cut to form a curved line *a*, as shown in Fig. 5, between the angle members.

The lower ends of the central web-plates 7, forming the column of the side member, are spread apart at their lower ends to form a pocket and inclose a portion of the tension member 3. The lower portion of this inclosed pocket is formed by bending downwardly the intermediate portion of the lower member 4, as shown in Fig. 4. The parts 8 8 of this member 4 are riveted to flanges 9 9 of the web-plate 7. The bottom member is provided with depending flanges 10, and this member merely connects the two pedestals and acts as a beam to resist horizontal sway imparted through the transom.

The top member 6 of the transom consists, preferably, of a pressed flanged shape, the flanges 11 projecting downwardly between the side members and being spread out at their ends over the side members, as shown in Fig. 1. The bottom member 12 of this transom consists of a channel with flanges 13 projecting upwardly, and these top and bottom members are tied together and supported by brake-beam hanger-plates 14, which are riveted to their flanges opposite the wheel-faces. These hanger-plates are of general channel shape, as shown in Fig. 1. The contour of their flanges is preferably of ear shape, as shown in Fig. 2. Sway members 15, preferably consisting of channel shapes with flattened ends, extend from the ends of the lower member 12 upwardly and inwardly to the central portion of the top member 6. The upper ends of the sway members 15 are secured by rivets, these being shown as passing through the center plate 16, the top member 6, the upper flattened end of the sway member, and the upper flanged end of a flat tie member 17. The tie members 17 extend downwardly and inwardly and are secured to the lower member 12, they being preferably formed of a single strip of general U shape.

The members 2 and 3 of each side member of the frame are arranged so that lines through the centers of gravity of each member and extending longitudinally of such member intersect substantially in a vertical plane over the center of the journal. I thus avoid bending stress in these side members. The only stresses brought upon them are endwise, either compressive or tensile stress. The extra material which has heretofore been necessary in order to support the bending stress on the side members is thus rendered unnecessary.

The ends of the member 3 are upset in forming them and are then flattened out to reduce the thickness and increase the width in the rivet-hole portions. The enlargement is preferably sufficient to maintain the cross-sectional area of the bar constant the same through the rivet-hole portions as through

the solid intermediate portions. These flattened end portions contain the only rivet-holes in the tension member, and hence I obtain the strength of the entire cross-section of the bar, since there are no holes in its middle portion. The flattened end portion is preferably given the greatest cross-section at the first rivet, counting from the center of the truss. The cross-sectional area is decreased from this point to the end in accordance with the decrease in stress carried, consequent on the successive rivets taking up part of the stresses. These flattened ends are riveted between the two angles of the member 2. The ends of these angles are bent over the top of the pedestals and terminate in downward extensions 19, to which the outer pedestal members 20 are bolted. The pedestal member 20 is preferably slotted at the top to receive the legs of the angle members, and it is cast or otherwise formed with flanges at the bottom bolted to the web portion of the member 4. The inner pedestal member 21 is riveted to the top and bottom members and slotted to allow passage of the tension-bar 3. The cross-section of these pedestal members is preferably of the form shown at the left hand of Fig. 1.

The top spring-bearing seat 22 is formed of a casting having a recessed slot at the center extending longitudinally of the side frame to receive the vertical web of the truss member. It is provided with four circular recesses in its bottom to receive the tops of the springs 23 and is secured by rivets extending through the top compression member of the truss, with countersunk heads in the spring-recesses.

The vertical weight carried on the truck is entirely supported on roller side bearings 24, each of which is above the vertical center plane of its side member. This I believe to be a new position for a roller-bearing, and I desire to cover the same broadly, since it gives the great advantage of doing away with all bending stresses on the transom resulting from vertical bearings either at the center or at intermediate points of the transom.

I have shown each bearing as consisting of rollers having trunnions carried in side members 25, with lower inwardly-projecting flanges 26, embracing the top flanges of the T-shaped roller-bed 27. The vertical web 28 of this T-shaped bed projects through a slot in the top transom member 6 and is provided with a curved lower edge, which fits neatly upon the curved saddle therefor formed on the upper edges of the web-plate between the members 2. The web 28 is of less thickness than the space between the members 2 to allow side rocking of the roller-bearing and enable it to accommodate itself to inaccuracies of construction. The roller-frame is preferably formed in one piece by cutting an I-shaped recess in a plate, bending the sides down to embrace the flanges of the roller-bed, and then bending the central portions outwardly into a vertical position to form the bearings for the trunnions. There is no car-body load upon the roller-trunnions, this weight being carried on the sliding and rocking roller-bed. The endwise movement of the bearings on the roller-bed is limited by cap-screws 28, projecting through longitudinal slots of the flanges 26 and into the flanges of the bed.

The center plate 16 has a central hole 30 to receive the pin on the body-bolster and acts merely as a side bearing or guide to resist lateral stresses. There is no vertical pressure upon it, and hence the transom can be made light. This construction also permits the body-bolster to be made light and shallow in depth, since it has no bending strains other than the ordinary floor-beam load. This is an important result of my construction, since an arbitrary outside limit is set for the depth of the body-bolster, which long use has made it difficult to change, and with the heavy cars now used much difficulty has been experienced in making the body-bolster deep enough to carry the load upon the center bearing.

The advantages of my invention will be obvious to those skilled in the art. The doing away with bending stresses on the transom enables it to be made light and also does away with the necessity of a deep and heavy body-bolster. The transom acts merely as a transverse connector and to receive and transmit side stresses. There is no bending stress on the truss members of the side frame, and hence these may be made light. The metal is economically distributed, and the entire cross-sectional area is utilized in supporting the stress. The tension member has rivet-holes only at the ends, and the desirable cross-sectional area is maintained in these flattened portions. The roller-bearing is extremely simple, may be cheaply made, and is allowed a universal movement on its supports to allow the rollers to accommodate themselves and to give a bearing throughout their length during the movements of the car body and truck. The vertical pressure on the lower bearings passes down through the rocker-supports and is taken on the column and transmitted to the tension member. The brake-beam hangers strengthen the transom and give the desired room between them and the wheel-faces. As the lines along the centers of gravity of the truss members and side frame intersect at the vertical center plane over the journal, there is substantially no bending strains upon these members. The entire construction is simple, of few parts, and well adapted for repairing or replacing of parts.

Many changes may be made in the form and arrangement of the parts without departing from my invention.

I claim—

1. A truck having a roller side bearing located in the vertical longitudinal center plane of the truck side member, said bearing ex-

tending parallel with the side member and having a plurality of parallel cylindrical rollers extending at right angles to the plane of the side member; substantially as described.

2. A car-truck having a center plate arranged to receive side stresses only, and roller side bearings located in the vertical longitudinal center planes of the side members and carried on rigid supports on said members; substantially as described.

3. A car-truck having a roller side bearing supported in the vertical longitudinal plane of the side member and carried on a rocking and sliding support; substantially as described.

4. A car-truck having a roller side bearing located in the vertical central longitudinal plane of the side member, said bearing having a rocking bed supported on the side member, and a roller-frame movable along said bed; substantially as described.

5. A car-truck side frame, having spaced-apart upper truck-frame members, a roller-bearing support having a part extending between said members, and a rigid support upon which said part is carried; substantially as described.

6. A car-truck side frame having an upper compression member, a central column, and a tension member held at the lower portion of the column and having riveted end portions, the intermediate portion of the tension member being free from rivet-holes; substantially as described.

7. A side frame having a tension member with a widened perforated end portion lying in the plane of the member, said end having in at least a part thereof substantially as great a cross-sectional area as the intermediate portion of the member; substantially as described.

8. A tension member for side frames having its ends flattened and perforated, the cross-section at the first rivet-hole counting from the center of the truss being substantially as great as that of the body of the member; substantially as described.

9. A side frame having a tension member with a flattened end, said end having a part thereof of substantially as great cross-sectional area as the main part of the member and thence decreasing in area toward the end of the flattened portion; substantially as described.

10. A truck side frame having a compression member and a tension member, the longitudinal lines through the centers of gravity of said members intersecting substantially in a vertical longitudinal plane through the axis of the journal; substantially as described.

11. A car-truck side frame having a top compression member, a central column, and a lower tension member, the lines along the centers of gravity of said top and bottom members intersecting each other substantially in the vertical plane which passes through the axis of the journal; substantially as described.

12. A truck side frame having a top compression member, a central column, a lower tension member free from intermediate rivet-holes, the ends of the tension member being flattened and the lines along the centers of gravity of said members intersecting substantially in a vertical longitudinal plane through the axis of the journal; substantially as described.

13. A side frame for car-trucks having a compression member formed of two angles, a central column riveted between the angles, and a tension member with flattened end portions secured between the ends of the compression-member angles; substantially as described.

14. A side frame for car-trucks having a top compression member bent down over the pedestals, top spring-bearing seats riveted to said member, and pedestal members secured to the compression member and to a lower longitudinal connecting member; substantially as described.

15. A side frame having spring-bearing seats formed of castings with vertical recesses, and an upper compression member having a web portion secured within the recess and with the upper flanges secured to the casting; substantially as described.

16. A transom having upper and lower members connected by brake-beam hanger-plates located opposite the wheel-faces; substantially as described.

17. A transom having a center bearing arranged to resist side stresses only, and provided with top and bottom members having inclined sway-member connections; substantially as described.

18. A side frame having a central column with a lower saddle portion, a top compression member, and a tension member seated in said saddle and free from rivet-holes in this intermediate portion thereof, the ends of the tension member being riveted or bolted to the compression member; substantially as described.

19. A side frame having a top compression member, a central column, an inclined tension member, and a connecting bottom member, the tension member having an intermediate portion free from rivet-holes and held within a pocket or recess at the lower end of the column, the ends of the tension member being riveted or bolted to the top compression member; substantially as described.

In testimony whereof I have hereunto set my hand.

E. W. SUMMERS.

Witnesses:
GEO. B. BLEMING,
L. M. REDMAN.