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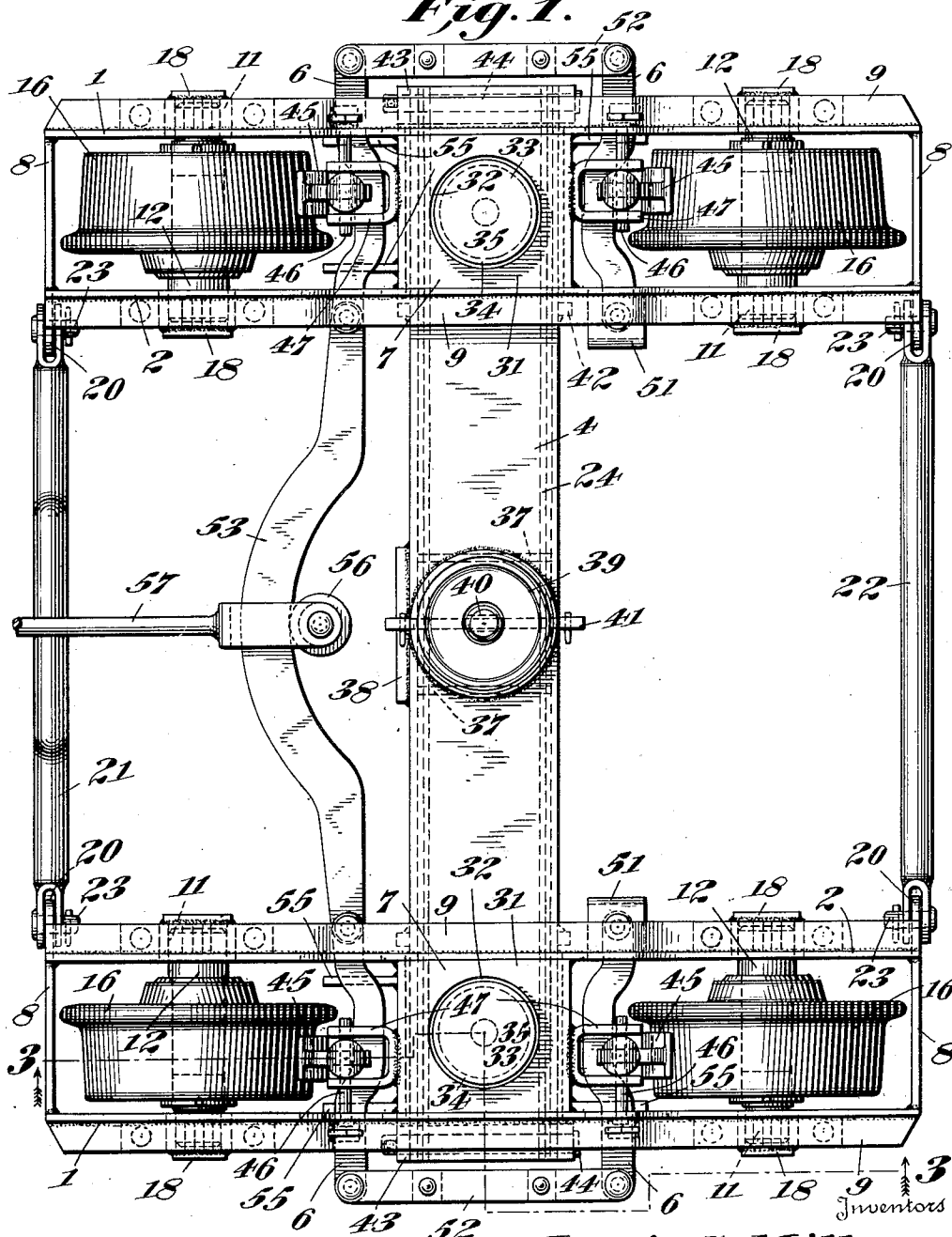
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FOUR-WHEEL TRUCK FOR MINE CARS

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3 Sheets-Sheet 1

Fig. 1.



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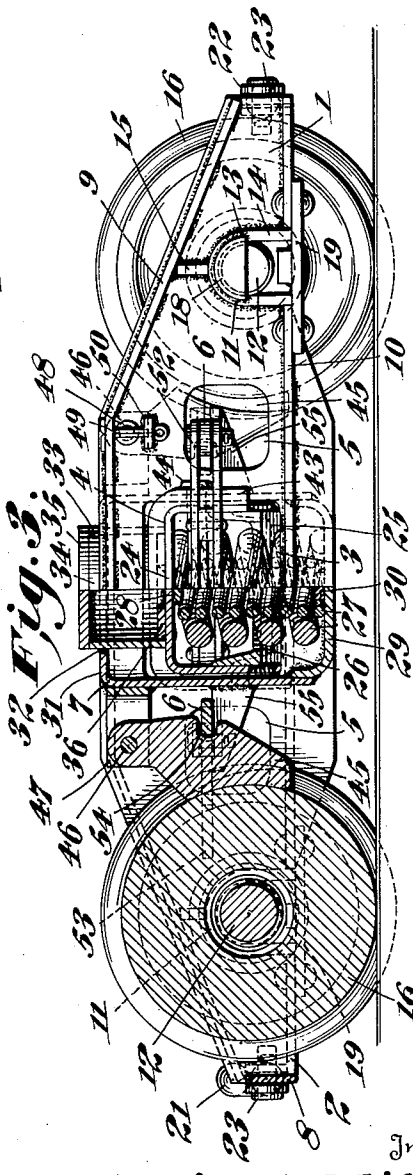
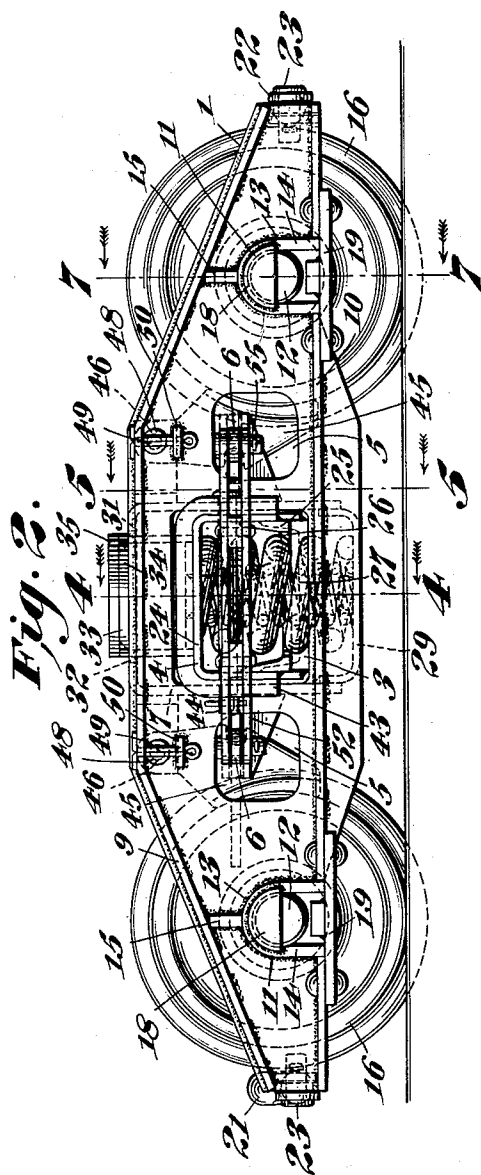
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3 Sheets-Sheet 2



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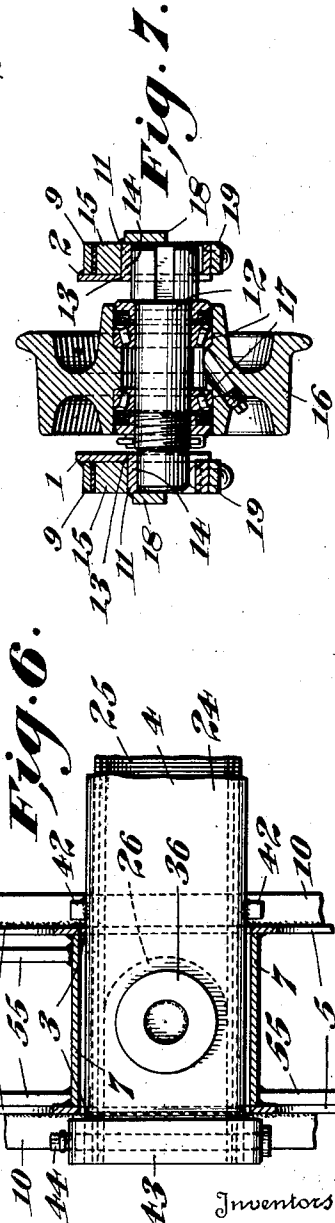
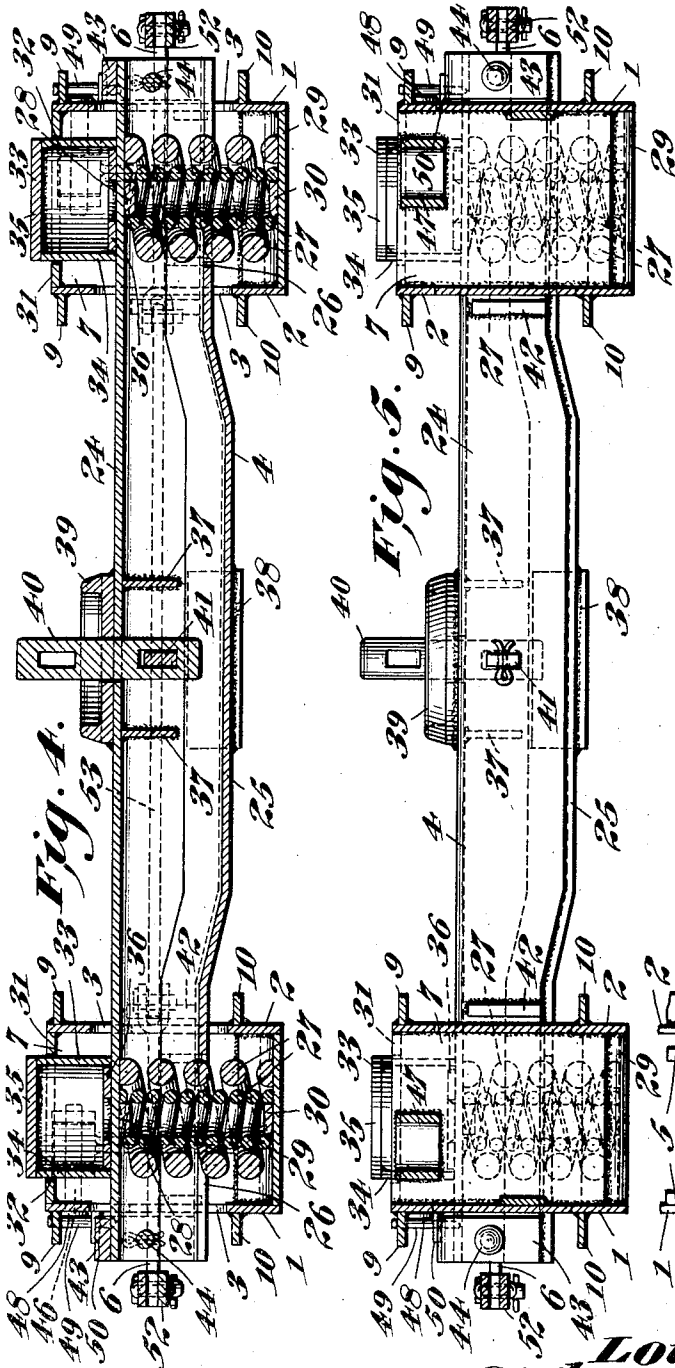
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FOUR-WHEEL TRUCK FOR MINE CARS

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3 Sheets-Sheet 3



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UNITED STATES PATENT OFFICE

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FOUR-WHEEL TRUCK FOR MINE CARS

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16 Claims. (Cl. 105—197)

This invention relates to railway car trucks and more particularly to trucks of the type in which each of the supporting wheels is mounted for independent rotation.

One of the objects of our invention relates to the manner of constructing the side frames of flat plates which are welded together so as to provide a simple and rigid structure.

Another object of the invention relates to the manner of securely connecting the side frames together but at the same time will permit the desired flexibility required for uneven tracks.

Another object of the invention relates to the construction of the bolster and the manner of assembling the same in the side frames.

A further object of the invention is to provide a simple means for supporting the axles in the side frames, and a further object of the invention relates to the manner of hanging the brake shoes and supporting the system of levers for operating the same.

With the foregoing and other objects in view, the invention will be more fully described hereinafter, and will be more particularly pointed out in the claims appended.

Having thus given a general description of the objects of our invention, we will now in order to make the same more clear, refer to the accompanying three sheets of drawings forming a part of this specification and in which like characters of reference indicate like parts.

Figure 1 is a top plan view of a four wheel truck embodying our invention.

Fig. 2 is a side elevation of the truck shown in Fig. 1.

Fig. 3 is a view partly in section and partly in side elevation as indicated on the line 3—3 of Fig. 1.

Fig. 4 is a vertical transverse section of the truck frame taken on the line 4—4 of Fig. 2.

Fig. 5 is a vertical transverse section of the truck frame taken on the line 5—5 of Fig. 2.

Fig. 6 is a detail view showing one end portion of the bolster in top plan and the adjacent portion of one of the side frames adjacent thereto partially in section and Fig. 7 is a vertical view through one of the wheels and the truck frame taken on the line 7—7 of Fig. 2.

Our invention is particularly adapted for use with small freight cars of 10 tons capacity more or less which may be used in mines or mills where a light weight truck is used adjacent the end of the car.

Referring to the accompanying drawings the two side frames, which are of similar construc-

tion are formed of rolled plate sections cut into the required shape and welded together, each consist of two vertically disposed side members 1 and 2 placed side by side in spaced relation one on each side of each pair of wheels and provided with a central opening 3 for the passage of the end of a bolster 4, and intermediate openings 5 through which the brake shoe operating levers 6 extend.

The outer and inner side frame members 1 and 2 respectively are connected together adjacent to the central openings 3 and the top edges of the same by means of a U-shaped truck column plate 7, and at the opposite ends in front of each wheel by means of a tie plate 8. The side plate members 1 and 2 are further reinforced near their top and bottom edges by means of laterally extending flanges 9 and 10 respectively.

Journal bearings 11 for receiving the ends of the axles 12 for the wheels are formed near the ends of each side frame member by cutting out a U-shaped opening 13 in the lower portion and inserting an inverted U-shaped plate 14 therein and welding it in position which is further reinforced by means of a vertical rib 15. The four wheels 16 for the trucks are each mounted on individual stub-shaft axles 12 with roller bearings 17 in the hubs of the wheels.

The ends of the stub shaft axles 12 are held in position by means of keeper plates 18 which are welded in position and tie bars 19 which are riveted to the bottom laterally extending flange 10.

The ends of the inner side frame members 2 are provided with inwardly extending perforated ears 20 for attaching the bifurcated perforated ends of tie rods 21 and 22 by means of headed pins 23. In this manner each pair of side frames is connected to the pair on the other side of the truck. This permits flexibility required for uneven tracks.

The truck side frames are connected centrally by the bolster 4 which is a fish bellied type, having greater depth at the intermediate portion than at the ends and is formed of a pair of channel shaped members 24 and 25. The top member 24 is formed of pressed plate metal disposed with its flanges extending downwardly, while the lower member 25 which is of slightly less width is a standard rolled channel having its flanges extending upwardly and inserted between the flanges of the top member 24 and welded thereto.

The web of the lower member 25 is cut out at each end as at 26 to allow the springs 27 to pass

through and to allow the web of the upper member to provide a seat for the upper ends of the said springs and has a centering boss 28 extending therefrom for holding the upper ends of the springs against lateral movement while the lower ends of the springs are seated on a plate 29 provided with a spring centering boss 30, said plate 29 connecting the lower ends of the truck column plate 7 and being welded thereto and to the lower edges of the central portions of the side plate members 1 and 2, thereby forming a rectangular tubular connection between the pair of side frame members 1 and 2.

The top web portions 31 of the truck column plates 7 each have an opening therein as at 32 for receiving a side bearing 33 having a tubular body portion 34 closed at the upper end by means of a disk 35 and the lower end open for engaging the top end portion of the bolster 4 and centered thereon by means of an annular plate 36.

The bolster 4 is provided centrally with transverse reinforcing plates 37, car haul wear plate 38, center plate 39 and king pin 40 which is adapted to have its lower end keyed to the truck bolster as at 41 and the upper end assembled and keyed to the car body bolster (not shown). The bolster is held in place in the side frames by permanent guides 42 welded thereon adjacent to the inside members 2 of the frame and a removable U-shaped guide 43 adjacent to the outside member 1 which is secured thereto by means of a bolt 44.

The truck side frames and bolster are assembled by placing the springs in position in the side frames and then slipping each pair of side frames over the ends of the bolster. The U-shaped end guides 43 are then applied and locked in position by means of the bolts 44.

The brake for the truck consists of brake shoes 45 hung by means of bolts 46 from U-shaped brackets 47 which are welded to the outer sides of the column guide plates 7. These bolts 46 have their inner ends extending through the brackets 47 and the upper ends of the brake shoes 45, while the outer ends extend through the outer side frame members 1 and are provided with a head as at 48 and prevented from being withdrawn by cotter pins 49 which pass through the upper flanges 9 of the outer side plate member 1 and a perforated lug plate 50. The brakes are set by means of a system of levers. At one side of the bolster the inner ends of the brake shoe operating levers 6 are each pivoted to a bracket 51 which is secured to the inner side frame members 2 while the outer ends extend outwardly beyond the outer side frame members 1 and are connected by means of links 52 to the outer ends of the brake shoe operating levers 6 on the other side of the bolster. Said brake shoe operating levers on this side of the bolster are connected together by means of an equalizing brake lever 53. The brake shoe operating levers 6 are not connected to the brake shoes but force the shoes into contact with the wheels by means of their engagement within a groove 54 in the back of each shoe. The brake shoe operating levers 6 are guided on supporting brackets 55 and are bent inwardly, which prevents revolving of the levers in a vertical plane when the shoes are applied.

The equalizing brake lever 53 for connecting the ends of the brake shoe operating levers on one side of the bolster is bent to a curve radius concentric with the center of the bolster so that the wheel 56 on the end of the pull rod 57 can roll on this curved surface without changing the

position of the roller with relation to the end of the car in going around curves.

Although we have shown and described our invention in considerable detail, we do not wish to be limited to the exact and specific details shown and described, but may use such substitutions, modifications or equivalents thereof, as are embraced within the scope of our invention or as are pointed out in the claims.

Having thus described our invention what we claim as new and desire to secure by Letters Patent is:

1. A four-wheel truck having side frames, each comprising a pair of spaced longitudinally extending side frame plate members arranged side by side adapted to receive wheels between them and provided with axle bearings intermediate the center and the ends of the side frame, a bolster receiving opening through the central portion of each side frame plate member, a truck column plate connecting the pair of side frame plate members at the vertical sides of the bolster receiving openings, a web connecting the top ends of the truck column plates and side frame plate members, a plate forming a spring seat secured to the lower ends of the truck column plates and the lower edges of the side frame plate members, laterally extending flange plates welded to the side frame plate members near their top and bottom edges, and tie plates connecting the ends of the side frame plate members.

2. A four-wheel car truck having side frames, each comprising a pair of spaced longitudinally extending plate members adapted to receive wheels between them and provided with axle bearings near the ends of the frame, a bolster opening extending centrally through each pair of plate members, a U-shaped truck column plate disposed with its legs extending downwardly and connecting the pair of side frame plate members at the top and sides of said bolster openings, and a plate adapted to form a spring seat connecting the lower ends of the truck column plate and the side frame plate members.

3. A four-wheel car truck having side frames, each comprising a pair of spaced longitudinally extending plate members adapted to receive wheels between them and provided with axle bearings near the ends of the frame, a bolster opening extending centrally through each pair of plate members, a U-shaped plate having downwardly extending legs forming truck columns connecting the pair of side frame plate members at the sides of said bolster openings, brackets secured to truck columns and extending laterally therefrom for supporting a brake rigging, a plate adapted to form a spring seat connecting the lower ends of the truck columns and the side frame plate members, said U-shaped and spring seat plates forming a rectangular tubular connection between the pair of plate side members extending entirely around the bolster receiving openings and tie plates connecting the opposite ends of the side frame plate members together.

4. A four-wheel car truck having side frames, each comprising a pair of spaced vertically disposed longitudinally extending plate members, tie plates connecting the opposite ends of the side frame plate members together, a bolster receiving opening through the central portion of each side frame plate member, laterally extending flange plates welded to each side frame plate member near the top and bottom edges, a truck column plate having a welded connection with

the pair of said plate members at the sides of the bolster openings, a flexible connection for the ends of the side frames, and a bolster having its ends resiliently supported in the bolster receiving openings for connecting the central portion of the side frames together.

5. A four-wheel truck having side frames, each comprising a pair of spaced vertically disposed longitudinally extending plate members adapted to receive the wheels between them and provided with axle bearings intermediate the center and ends of the frame, a bolster receiving opening through the central portion of each plate member, a truck column plate welded adjacent to the edges of the bolster receiving openings for connecting the central portions of the plate members together, tie plates for connecting the opposite ends of the side frame plate members together, and laterally extending reinforcing flange plates welded to the side frame plate members near their top and bottom edges.

6. A four-wheel car truck having side frames, each comprising a pair of spaced vertically disposed longitudinally extending plate members adapted to receive the wheels between them and provided with axle bearings intermediate the center and ends of each plate member, a bolster receiving opening through the central portion of each plate member, a U-shaped truck column plate disposed with its legs extending downwardly and welded adjacent to the top and side edges of the bolster receiving openings for connecting the central portion of the plate members together, a plate adapted to form a spring seat connecting the lower ends of the legs of the truck column plate together, tie plates for connecting the opposite ends of the side frame plate members together, and laterally extending reinforcing flange plates welded to the side frame plate members near their top and bottom edges.

7. A four-wheel car truck having side frames, each comprising a pair of spaced vertically disposed longitudinally extending plate members adapted to receive wheels between them and provided with inverted U-shaped axle bearings secured thereto intermediate the center and the ends of the plate members, a bolster receiving opening through the central portion of each side frame plate member, a truck column plate having a top web portion with downwardly extending legs welded to the side frame plate members adjacent to the top and vertical side edges of the bolster receiving openings, a plate adapted to form a spring seat connecting the lower ends of the legs of the truck column plate and the side plate frame members, and tie plates connecting the opposite ends of the side frame plate members together.

8. A four-wheel car truck having side frames, each comprising a pair of spaced longitudinally extending plate members adapted to receive the wheels between them and provided with axle bearings near the ends of each plate member, a bolster receiving opening through the central portion of the side frame plate members, a U-shaped truck column plate having a top web portion and downwardly extending legs secured to the side frame plate members at the top and vertical side edges of the bolster receiving openings, a plate adapted to form a spring seat connecting the lower ends of the legs of the truck column plate and the lower edges of the side plate frame members, tie plates connecting the opposite ends of the side frame plate members together, springs mounted on the spring seat plate,

a bolster having its ends supported on the springs for connecting the side frames centrally, and tie rods connecting the ends of the side frames together.

9. A four-wheel car truck having a side frame on opposite sides of the truck, each comprising a pair of spaced longitudinally extending plate members adapted to receive the wheels between them and provided with axle bearings near the ends of each plate member, tie plates for connecting opposite ends of each pair of side frame plate members, a U-shaped truck column plate having a top web and downwardly extending leg portions secured to the side frame plate members at the top and opposite side edges of the bolster receiving openings, a plate adapted to form a spring seat connecting the lower ends of the legs of the truck column plate and the side frame plate members, springs mounted on the spring seat plate, a bolster having its ends supported on the springs for connecting the central portion of the side frames together, an opening in the web of each truck column plate, and a removable side bearing in each opening in the web of the truck column plate supported on the ends of the bolster in the side frame.

10. A four-wheel car truck having a side frame on opposite sides of the truck, each comprising a pair of spaced longitudinally extending plate members adapted to receive the wheels between them and provided with axle bearings near the ends of each plate member, a rectangular tubular plate connection for each pair of spaced longitudinally extending plate members adjacent to the edges of each bolster receiving opening, a bolster resiliently supported at its ends in the rectangular tubular plate connection and the bolster receiving openings, a removable side bearing mounted in an opening in each side frame and supported on each end of the bolster, and a flexible connection between the ends of the side frames.

11. A four-wheel car truck having side frames, each comprising a pair of spaced longitudinally extending plate members adapted to receive the wheels between them and provided with axle bearings near the ends of each plate member, a bolster receiving opening extending centrally through each pair of plate members, a truck column plate connecting the pair of plate members at the top and vertical side edges of said bolster openings, a plate adapted to form a spring seat secured to the lower ends of the truck column plate and the central lower edges of the pair of side frame plate members, tie plates connecting the opposite ends of the side frame plate members together, and a laterally extending reinforcing flange secured to each side frame plate member adjacent to the top and bottom edges.

12. A four-wheel truck having side frames, each formed of a pair of spaced longitudinally extending side plate members arranged side by side adapted to receive wheels between them and provided with axle bearings intermediate the center and ends of each side frame plate member, a bolster receiving opening through the central portion of each side frame plate member, means for connecting the pair of side frame plate members together adjacent to the edges of the bolster receiving openings, comprising a plate having a top horizontal web with vertical side portions forming truck columns and a bottom plate secured to the lower ends of the truck columns adapted to form a spring seat, springs mounted on the spring seat plate, a bolster connecting the side frames having its ends sup-

ported on said springs, and tie bars pivoted to the ends of the frames for connecting the side frames together.

13. A four-wheel car truck having side frames, each formed of a pair of spaced longitudinally extending side plate members arranged side by side adapted to receive wheels between them and provided with inverted U-shaped axle bearings welded thereto intermediate the center and ends of each side frame plate member, a bolster receiving opening through the central portion of each side frame plate member, a connection between the pair of side frame plate members extending around the bolster receiving openings, comprising a plate having a top horizontal web with vertical side portions forming truck columns and a bottom plate connecting the lower ends of the truck columns adapted to form a spring seat, springs mounted on the spring seat plate, a bolster connecting the side frames having its ends supported on said springs, said bolster formed of an upper and lower channel shaped members disposed with their flanges extending toward each other and welded together, a cut out portion in the ends of the web of the lower channel shaped member to clear the springs and to allow said springs to be seated on the ends of the web of the upper channel shaped member of the bolster, and the tie bars having a pivotal connection with the ends of the side frames.

14. A four-wheel car truck having side frames, each formed of a pair of spaced longitudinally extending plate members arranged side by side adapted to receive wheels between them and provided with inverted U-shaped axle bearings welded thereto intermediate the center and ends of each side frame plate member, a bolster receiving opening through the central portion of each side frame plate member, a rectangular tubular connection between the pair of side frame plate members extending around the bolster receiving openings, comprising a plate having a top horizontal web with vertical side portions forming truck columns and a bottom plate connecting the lower ends of the truck columns adapted to form a spring seat, springs mounted on the spring seat plate, a bolster having its ends extending through the bolster receiving openings in the side frames provided with spring seats formed therein for receiving the upper ends of the springs, tie plates for connecting opposite ends of each pair of side frame plate members, and tie bars having a pivotal connection with the ends of the side frames.

15. A four-wheel car truck having side frames, each formed of a pair of spaced longitudinally extending plate members arranged side by side adapted to receive wheels between them and provided with inverted U-shaped axle bearings welded thereto intermediate the center and ends of each side frame plate member, a bolster receiving opening extending through the central portion of each side frame plate member, a rectangular tubular connection between the pair of side frame plate members extending around the bolster receiving openings, comprising a plate having a top horizontal web with vertical side portions forming truck columns and a bottom plate connecting the lower ends of the truck columns adapted to form a spring seat, springs mounted on the spring seat plate, a bolster having its ends extending through the bolster receiving openings in the side frames provided with spring seats therein near its upper surface for engaging the upper ends of the springs, an opening in the top horizontal web plate of the rectangular tubular connection between the pair of side frame plate members, a removable side bearing mounted in the opening in the top horizontal web plate and seated on the end of the bolster above the spring seats, a removable guide on each end of the bolster, and tie bars having a pivotal connection with the ends of the side frames.

16. A four-wheel truck having side frames, each comprising a pair of spaced longitudinally extending plate side members arranged side by side adapted to receive wheels between them and provided with axle bearings intermediate the center and ends of the frame, tie plates connecting the opposite ends of the pair of plate side members, a bolster receiving opening through the central portion of each plate side member, a rectangular tubular connection between the pair of plate side members extending around the bolster receiving openings adapted to form truck columns at the vertical sides and a plate adapted to form a spring seat connecting the lower ends of the truck columns, springs mounted on the spring seat, a bolster having its ends extending through the bolster receiving openings in the side frames and supported on the springs, a side bearing removably mounted in each side frame and seated on the top ends of the bolster, removable guides on the ends of the bolster, and tie bars having a pivotal connection with the ends of the side frames.

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