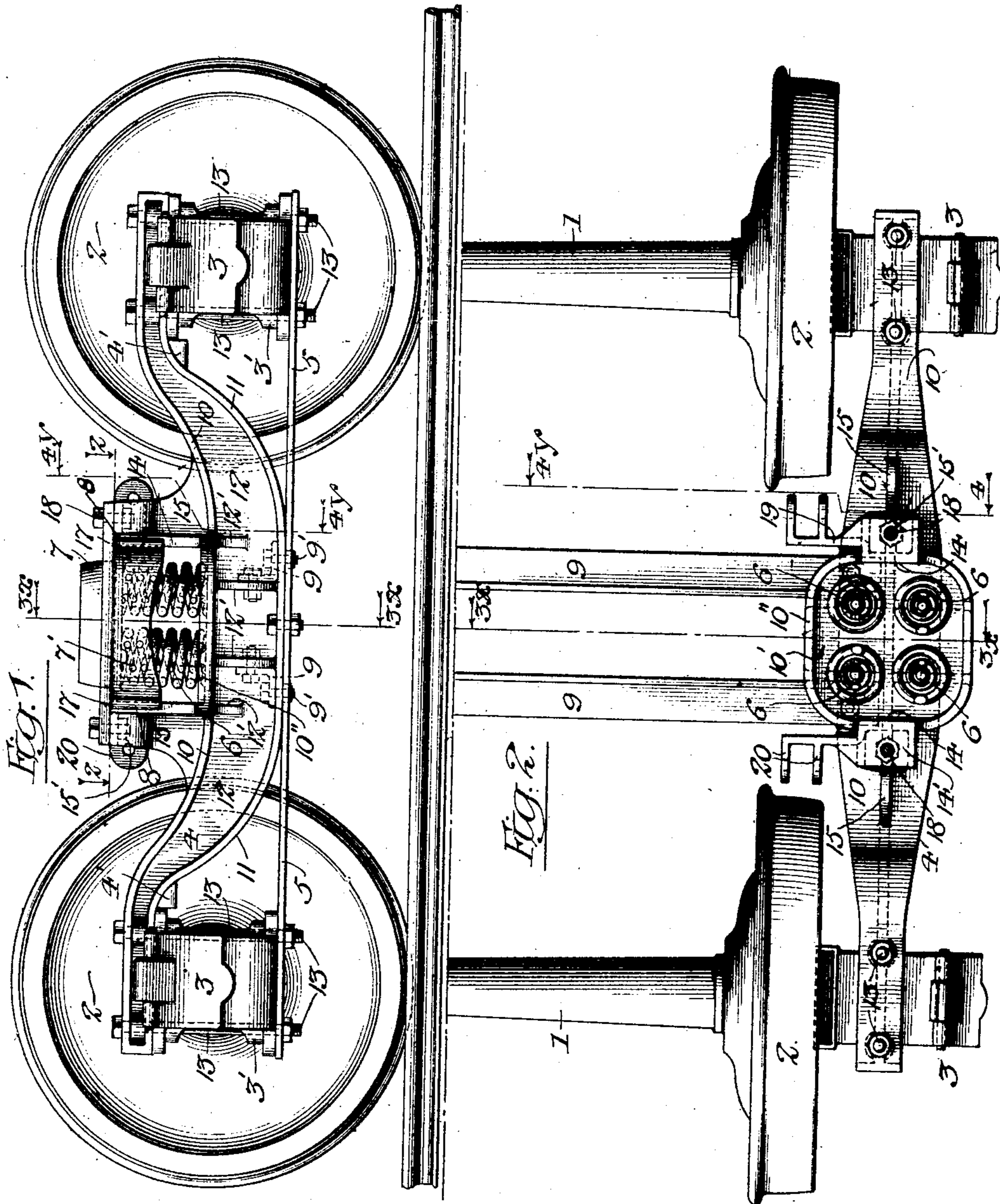


No. 786,575.

PATENTED APR. 4, 1905.

A. LIPSCHUTZ.
CAST STEEL CAR TRUCK.
APPLICATION FILED NOV. 23, 1904.

2 SHEETS—SHEET 1.



Witnesses:-
Wm. M. Whitehead
John R. Lefevre

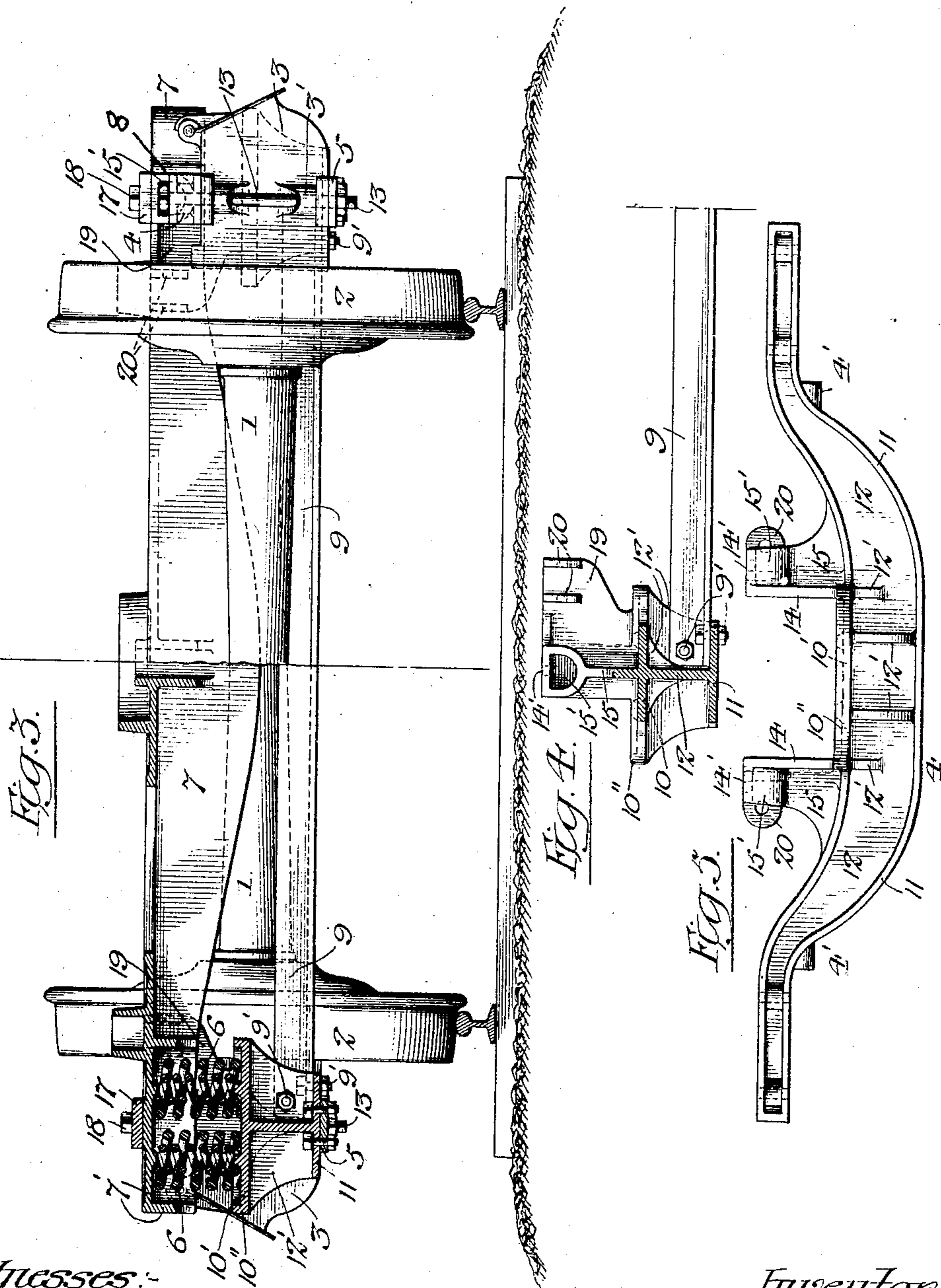
Inventor:-
Arthur Lipschutz
By:- *Charles Wilson Hawley*
Atty.

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John R. Leeper

Inventor:

Arthur Lipschutz

By:

Charles Albert Hawley
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UNITED STATES PATENT OFFICE.

ARTHUR LIPSCHUTZ, OF ST. LOUIS, MISSOURI, ASSIGNOR OF ONE-HALF
TO HERBERT W. WOLFF, OF ST. LOUIS, MISSOURI.

CAST-STEEL CAR-TRUCK.

SPECIFICATION forming part of Letters Patent No. 786,575, dated April 4, 1905.

Application filed November 23, 1904. Serial No. 234,035.

To all whom it may concern:

Be it known that I, ARTHUR LIPSCHUTZ, a citizen of the United States, residing in the city of St. Louis and State of Missouri, have
5 invented a certain new, useful, and Improved Cast-Steel Car-Truck, of which the following is a full, clear, and exact description, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, forming a part of this specification, in which—

Figure 1 is a side elevation of a car-truck embodying my invention. Fig. 2 is a plan
15 view of one-half of the car-truck, the truck-bolster having been removed to disclose the spring-seat, which is formed upon the truck-beam or side frame. Fig. 3 is an end elevation of the truck, one-half thereof being in
20 vertical section on the lines 3^x 3^x of Fig. 1. Fig. 4 is a transverse vertical section of the side or truck beam on the line 4^y 4^y of Figs. 1 and 2, and Fig. 5 is a detailed side elevation of the truck-beam above referred to.

25 This invention relates to railway-trucks composed of metal, and has special reference to improvements in trucks of that class wherein the journal-boxes are rigidly secured in the truck-frame and wherein the truck-bolster is supported by springs upon the side
30 frames of the truck as distinguished from those trucks wherein the bolster is supported by transverse transoms. In a truck of this general class the truck-bolster is generally
35 quite as long as the car-axles, and its ends extend through or beyond the side frames, the springs for supporting the bolster being arranged substantially in the vertical planes of the said frames.

40 My invention relates particularly to improvements in the side frames of trucks, though not particularly or specially confined to such parts.

The object of the invention is to provide a
45 car-truck which shall be of less weight and cost than others of this class and which shall be composed of fewer parts.

Another and distinct object of the invention is to so improve the construction of the
50 side frames of car-trucks as to provide ample

spaces for the bolster-springs and yet afford ample strength, and, furthermore, enable the the placement and the removal of the bolster without requiring the side frames to be taken
55 down or dismembered.

A further object of my invention is to provide a bolster supporting and guiding truck frame or beam that may be made in a single piece.

The particular object of the invention is to
60 provide a car-truck in which the usual transoms shall be dispensed with and in which single-part truck-beams, one on each side of the truck, shall take the place of the arch-bars, truck-columns, spring-seats, and minor asso-
65 ciated parts commonly used to connect the journal-boxes of a truck and support the ends of the truck-bolster.

A further and particular object of the invention is to provide a car-truck of the de-
70 scribed class whereof the chief members may be made of cast-steel.

Broadly defined, my invention consists in a car-truck that is characterized by side beams which have tops that are adapted to guide and
75 support the truck-bolster and the ends of which beams rest upon and are secured to the tops of the journal-boxes of the truck, and a further characteristic of my invention is that the bolster end guide openings or jaws in the
80 sides of my truck are open at the top, so that the bolster may be removed without disturbing any other part of the truck except the light detachable bolster-stops.

Specifically defined, my invention embraces
85 and resides in a truck having side beams that are provided with upwardly-extending bolster-columns and an expanded or widened top, which latter is preferably integral with the beam and serves as the seat for the bolster-
90 springs. The side members thus equipped with spring-seats and bolster-guides I generally make of cast-steel, and my invention takes its special name from these castings. I desire, however, to state that though I prefer
95 that each distinct complete member of my truck shall be a single metal, preferably steel, casting, said members may be constructed of one or more pieces of rolled, pressed, or cast metal, and I do not limit my invention to a
100

car-truck in which the chief members consist of single pieces of cast metal or to the particular constructions herein shown and described, but refer to the appended claims to point out and define my invention.

Referring to the drawings for a better understanding of the preferred embodiment of my invention, 1 1 represent the axles, 2 2 the wheels, and 3 3 the journal or oil boxes of the truck. The journal-boxes upon each side of the truck are joined by a truck-beam 4, supplemented by a tie-bar 5. The novel features of my invention are grouped in and about these side beams, which take the place of the more complicated arch-bar frames in ordinary use. The springs 6 rest upon the side beams, and the bolster 7 in turn rests upon the springs 6, having its ends guided by column parts on said side beams. The bolster may be of any desired form and may be either metallic or wooden; but I prefer a cast-steel bolster of the general form illustrated in Fig. 3. This bolster is mainly composed of a wide flat top and depending truss-shaped webs. The ends of the bolster comprise open-bottomed boxes or spring-seats 7' to receive the upper ends of the springs 6 6. The characteristic cross-section of the bolster is an inverted-U shape, with front and back webs of greatest depth at the middle of the bolster. At its ends the bolster is provided with vertical ribs or shoulders 8 to cooperate with the bolster columns or guides upon the side beams. In place of the common spring-plank I usually employ the parallel angle-bars 9, which extend between the side beams of the truck. It will be noted that the ends of the bolster extend through and beyond the side beams or frames of the truck and that the spring centers—that is, the centers of the groups of springs—lie substantially in the middle vertical planes of respective side beams, the pressure of the bolster being directly downward upon said side beams without side or lateral thrust.

The side or truck beams are identical in shape, but occupy reverse positions, and a description of one will serve for both.

While, as intimated above, the truck-beams may be made of several cast or rolled metal parts, I much prefer that it shall be a single piece of cast-steel molded to the exact form required and adapted to serve the several functions of the many equivalent parts in the ordinary truck-frame. In shape the beam is an inverted arch-bar, smaller at the ends than middle, with its middle top portion substantially in the plane of the car-axle centers. Because of this shape of the beams the bolster is, in effect, swung or hung from the tops of the journal-boxes, and its lateral thrust has little torsional effect upon the truck-beams. The upper and lower chords or webs 10 and 11 of the truck-beam are straight at the ends and also at the middle, and the intermediate

converging parts take the forms of ogee curves, giving the whole the appearance of a dipped or depressed center truss. The top and bottom webs 10 and 11, which provide strength against lateral strains, are joined by one or more vertical webs 12, which of little height at the ends of the beam increase in depth toward the middle of the beam, affording ample strength to resist vertical strains. The ends of the beam are straight and rest squarely upon the tops of the journal-boxes. The bottom of the beam is substantially in the plane of the bottoms of the journal-boxes, and the tie-bar 5 is bolted or otherwise secured to the bottom flange 11 of the truck-beams. Large bolts 13, extending between the ends of the beam 4 and the tie-bar 5, embrace the boxes 3 to bind the parts 4 and 5 firmly upon said journal-boxes. The bolts pass through lugs or ears 3' on the journal-boxes.

4' represent gage-lugs on the beams 4.

When the journal-boxes 3, the beam 4, and the tie-bar 5 are properly aligned and bolted together, they constitute a rigid and very strong frame of comparatively light weight, the beam because of its peculiar shape being capable of sustaining a great weight and withstanding all lateral and torsional strain.

Referring to Fig. 5, it will be seen that the side beam is provided with a bolster-space that is open at the top, being formed by the jaws or columns 14 that rise from the top of the beam. The columns or jaws 14 14 are plate-like in form and are strengthened by the thick webs 15, together with the top flanges 14' and the bifurcated webs 15', all integral with the body of the beam. The columns thus formed are fully capable of withstanding all fore and aft and lateral strains or blows from the truck-bolster, and these columns or guides 14 fit the ends of the bolster and prevent its longitudinal movement in the truck-frame.

When the bolster has been put in place, as shown in Figs. 1 and 3, it is retained by a light locking-bar 17, placed across the tops of the columns 14 and secured by bolts 18, the nuts whereof are within the inclosures formed by the bifurcated webs 15'. (See Fig. 4.)

That portion of the top flange or web of the truck-beam which lies between the integral columns 14 is widened or expanded to form the spring-seat 10'. This portion is provided with an encircling flange 10'' and is further strengthened by bracket-webs 12' upon the sides of the beam. (See Figs. 4 and 5.) This seat portion 10' of the beam is substantially as large as the spring-seat or pocket of the bolster, and the springs 6 are arranged between the two seats. Integral lugs cast on the surfaces of the spring-seats serve to center the springs, as shown in Fig. 3.

The ends of the channel, spring-plank, angles 9, or equivalent preferably abut against the inner side of the vertical web of the truck-

beam, and, as shown in Figs. 1, 3, and 4, the horizontal and vertical flanges of the angles 9 are secured to corresponding parts 11 and 12' of the truck-beam by bolts 9'. The angles perform the office of preventing the spreading apart of the two truck-beams, being assisted therein by the column and column-guides of the bolster.

It has been explained that the truck-beam not only ties or rigidly joins two journal-boxes, but also supports the weight of and on the truck-bolster, furnishes the bolster-spring seat, provides or contains the bolster-guides, and, with a simple bar, constitutes the means for securing the bolster and spring in proper place. In addition to these functions I make the side beams of my truck to perform the further service of supporting the brake-beams of the truck. The brake mechanism of the truck is not shown in the drawings; but it will be seen that each truck-beam is provided with two vertical bracket-like webs 19, arranged upon the upper inner side thereof above the top web 10. These brackets 19 are preferably integral with the columns or bolster-guide 14 and are provided with lugs 20, having holes for pins and adapted to support the brake-beams and hangers. The projection of the brackets from the inner side of the beam serves to locate the brake-hanger lugs adjacent to and in line with the truck-wheels.

It will be obvious that the gist of my invention—to wit, a truck-beam or side frame, all of which is substantially beneath the bolster-spring seat, with a spring-seat and columns upon its top—may be embodied in a beam that is built up from several parts. Thus the columns or the spring-seat plate, or both, may be formed separately and bolted or fastened upon the top of the beam proper. This is also true of the brake-hanger lugs, and it is also obvious that both the longitudinal and the cross-section of the truck-beam, as herein shown, may be modified to meet special requirements, and generally, as it is obvious that numerous modifications of my invention will readily suggest themselves to one skilled in the art, I do not confine the invention to the specific constructions herein shown and described.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. In a car-truck, downwardly curved or depressed center, cast-steel side beams which rest upon the tops of journal-boxes, in combination with bolster-guide jaws on the tops of said beams providing bolster-spaces that are open at the top, and spring-seats upon the beams between the jaws thereof, substantially as described.

2. In a car-truck, the axles, wheels, journal-boxes, bolster and bolster-springs, in combination with cast-metal side beams which rest upon said journal-boxes and have depressed middle portions, the tops of which are

provided with spring-seats to support said bolster, and bolster-jaws on said beams, open at the top, substantially as described.

3. In a car-truck, the axles, wheels, journal-boxes and bolster, in combination with cast-steel side beams resting and secured upon the tops of said journal-boxes, said beams being provided with open-topped bolster guides or jaws from which the bolster may be removed without disturbing the other parts named, said beams being also provided with spring-seats between respective guides or jaws, substantially as described.

4. In a car-truck, the journal-boxes, in combination with a side beam having its ends secured upon the tops of said journal-boxes, and having a depressed, enlarged middle portion constituting a spring-seat, a suitable truck-bolster having an inverted spring-seat upon its end and springs arranged between said seats, substantially as described.

5. In a car-truck, the journal-boxes of one side of the truck, in combination with a side beam having its ends resting upon and secured to said boxes, said beam having a downwardly-curved middle portion, and the middle top of said beam being equipped with bolster guides or columns joined by a bolster-stop, substantially as described.

6. In a car-truck, the journal-boxes of one side of the truck, in combination with a side beam having its ends resting upon and secured to said boxes, said beam having a downwardly-curved middle portion and the middle top of said beam being equipped with bolster guides or columns and a spring-seat, substantially as described.

7. In a car-truck, the journal-boxes, in combination with side beams which rest upon and are secured to the tops of respective pairs of said boxes, a spring-seat upon the middle top of each said beam, columns extending upward from said top and means joining the tops of each pair of columns, substantially as described.

8. In a car-truck, the journal-boxes, in combination with the side beams, the ends of which rest upon respective boxes, said beams having the form of inverted arches with their middle tops substantially in the plane of the axle centers of said boxes, bolster-fittings upon the tops of said beams and a tie-rod for each beam and pair of boxes, substantially as described.

9. In a car-truck, a truck-beam supported on the tops of the journal-boxes and provided with a widened or expanded middle top portion, constituting a bolster-spring seat, substantially as described.

10. A truck side beam, comprising a flanged beam having ends adapted to rest upon the tops of journal-boxes and having a top flange that is widened at the middle to form a spring-seat, substantially as described.

11. In a car-truck, the journal-boxes, in

combination with the beam, having its ends resting upon the tops of said journal-boxes, and provided with a middle widened portion constituting a spring-seat, and having superimposed truck-bolster guides or columns, substantially as described.

12. In a car-truck, the journal-boxes, in combination with a beam having a vertical web and horizontal flanges, said beam resting upon said boxes, the top flange of said beam being widened at the middle to form a spring-seat, and provided with integral upwardly-extending bolster guides or columns, substantially as described.

13. In a side frame or beam for car-trucks, a flanged beam having ends of relatively reduced width and depth, the top of said beam constituting a spring-seat, bolster guides or columns arranged upon the top of said beam and brake-hanger lugs projecting from said beam, substantially as described.

14. A side frame or beam for car-trucks, comprising a flanged beam, having ends of less size than its middle portion, the middle top flange of said beam being widened to form a spring-seat and said beam being provided with integral bolster guides or columns and truck-hanger lugs, substantially as described.

15. In a car-truck, the wheels, axles, journal-boxes and bolster, in combination with side beams supported upon the tops of respective boxes, said beams being provided with spring-seats by suitably widening the middle portions thereof, truck-bolster guides superimposed on said beams and springs interposed between the widened portions of said beams and the ends of said bolster, substantially as described.

16. In a car-truck side beam, the inverted-

arch beam composed of vertical and horizontal webs and flanges, said vertical web diminishing in height toward the ends of the beam, and the top flange of the beam being widened at the middle of the beam and provided with integral bolster-columns and laterally-extending brake-hanger lugs, substantially as described.

17. In a car-truck, the wheels, axles, journal-boxes and truck-bolster, in combination with parallel beams forming the sides of said truck and having their ends secured upon the tops of said boxes, the middle portions of said beams being depressed and having top flanges that are widened to form spring-seats, bolster guides or columns superimposed upon said top flange, means for joining the tops of the pairs of guides or columns to secure the bolster therein, and bolster-springs arranged between the pairs of columns and resting upon said seats, substantially as described.

18. In a car-truck, the journal-boxes, in combination with a tie-bar extending between said journal-boxes and attached to the bottoms thereof, an inverted arch-bar or beam having its ends fastened upon the tops of said boxes and its middle portion fastened to said tie-bar, the top of said beam being suitably widened to form a spring-seat and being equipped with suitable bolster guides or columns, substantially as described.

In witness whereof I have hereunto set my hand, this 19th day of November, 1904, at St. Louis, Missouri, in the presence of two witnesses.

ARTHUR LIPSCHUTZ.

Witnesses:

CHAS. WHIDDLE,

JULIUS C. HERRMANN.