No. 819,111. PATENTED MAY 1, 1906.

R. C. WRIGHT & F. E. STEBBINS.

CONSTRUCTION OF CAR TRUCKS.

APPLICATION FILED FEB. 14, 1896.

2 SHEETS—SHEET 1.

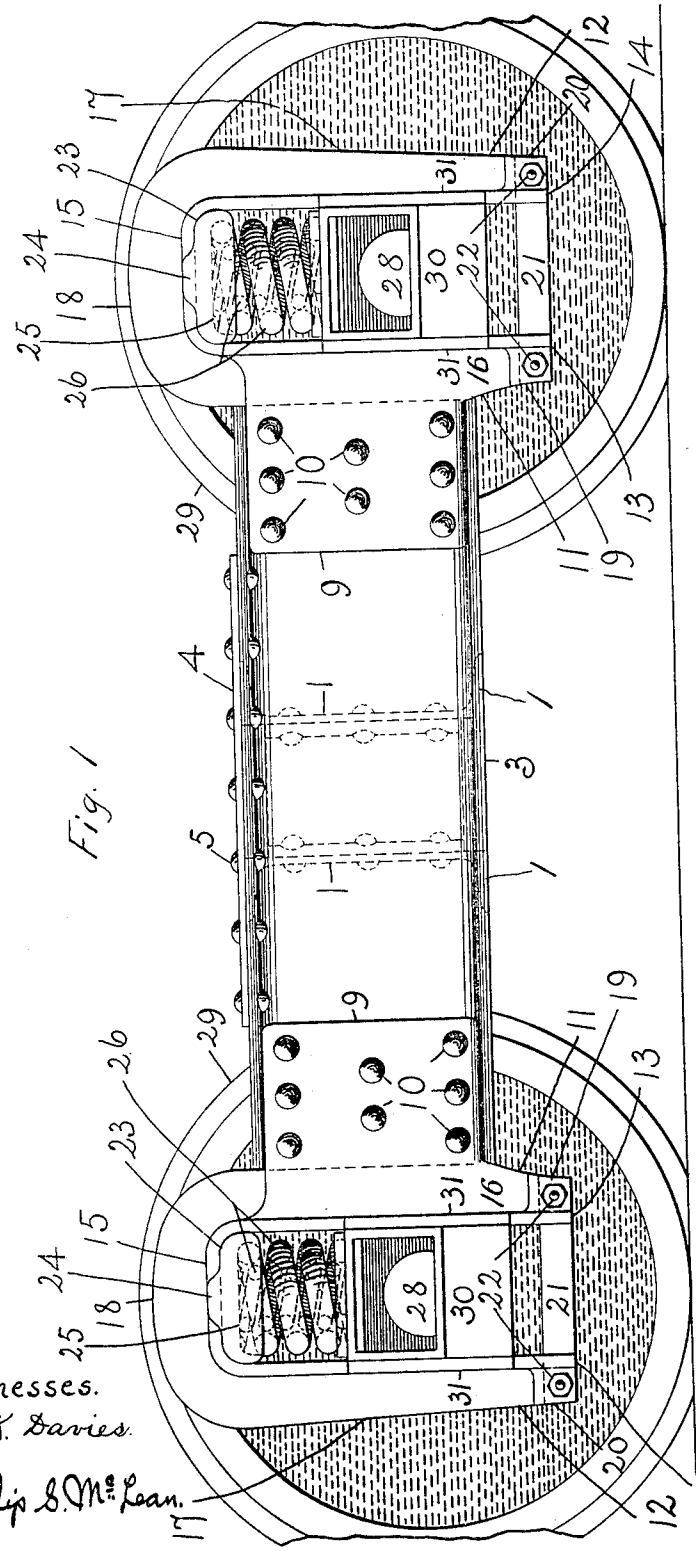

Fig. 1

Witnesses.
C. K. Davies.
Philip S. McLean.

Inventors.
R. C. Wright
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Atty.

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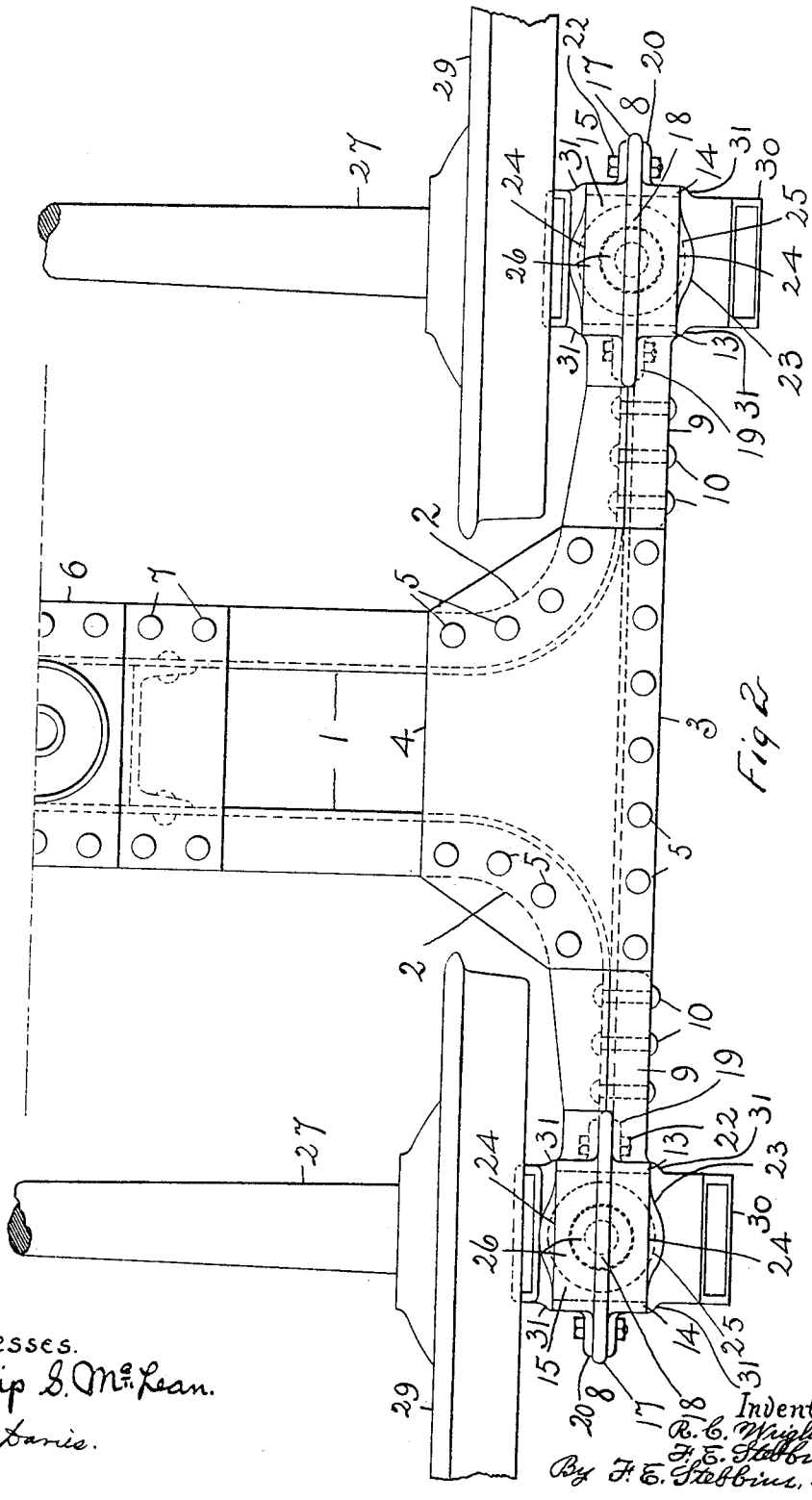

Fig 2

Witnesses.
Philip S. McLean.
C. K. Davis.

Inventors.
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By F. E. Stebbins, Atty.

UNITED STATES PATENT OFFICE.

RANSOM C. WRIGHT, OF PHILADELPHIA, PENNSYLVANIA, AND FRANK E. STEBBINS, OF WASHINGTON, DISTRICT OF COLUMBIA.

CONSTRUCTION OF CAR-TRUCKS.

No. 819,111. Specification of Letters Patent. Patented May 1, 1906.

Application filed February 14, 1896. Serial No. 579,234.

To all whom it may concern:

Be it known that we, RANSOM C. WRIGHT, residing at Philadelphia, county of Philadelphia, State of Pennsylvania, and FRANK E. STEBBINS, residing at Washington, District of Columbia, citizens of the United States, have invented certain new and useful Improvements in the Construction of Car-Trucks; and the following is a description thereof sufficiently full, clear, and accurate as will enable persons skilled in the art to take the necessary steps and embody the same.

The improvements relate especially to the making of the frames of car-trucks and the combination of the said frames with the journal-boxes, springs, and wheels and axles so as to adapt them for carrying heavy freight-cars. Four styles or types of truck-frames for such service have heretofore been designed.

First, the diamond type. This truck-frame is objectionable by reason of the great number of parts of which it is comprised, the absence of springs between the frame and journal-boxes, its excessive weight, the great amount of time required for inspecting it to see that the numerous bolts, nuts, and movable parts are in place, its tendency to get out of square, and its liability to bend at the points where the side bars are joined to the journal-boxes, tipping the journal-boxes out of their proper positions and causing the brasses to wear unevenly and to become hot.

Second, the truck-frame having each side made of a single piece of plate-steel pressed to shape. The objections to this type are that the best quality of steel is required in its construction. Special rolled shapes of very large dimensions must be provided to allow the pedestals to be made integral with the side frames, thus increasing the cost. A special plant with special tools and large and costly dies are requisite for its manufacture. If the frame becomes bent by accident or otherwise, an entire side must be discarded or restored to its proper shape with much labor, and the outer pedestal-legs are relatively weak. Its light weight, however, makes it preferable to the diamond construction.

Third, the truck having its side pieces of integral cast-steel. This type is objectionable on account of the excessive first cost, the possibility of latent imperfections existing in so large a casting, its great weight, and the necessity of discarding an entire side piece when a part thereof becomes broken or excessively bent or distorted.

Fourth, the type with each side frame made up of bent iron or steel shapes having parts of the pedestals integral with the side or parts thereof. This frame requires the use of special machines and special manipulations in its manufacture. When bent out of shape, it must be reformed at great expense and with difficulty, and when a pedestal is broken an entire side must generally be discarded.

The purpose of our invention is to avoid the objections appertaining to the before-mentioned and other types of construction and to produce a truck-frame which shall be cheap in first cost, comprised relatively of few parts, easily constructed in the ordinary car-shop, quickly and easily repaired by the removal and substitution of a part or parts, which shall have great rigidity and strength where the transoms join the side pieces, thus keeping the frame square, which shall be of comparatively light weight, easily inspected, and the pedestals of such a construction that they will be strong and can be removed from the side pieces when worn or bent and others be substituted.

With these main ends in view our invention consists in constructing the transoms and sides of relatively wide iron or steel beams or shapes rolled or pressed and preferably of channel shapes having heavy or wide flanges and the webs thereof located in vertical planes and attaching upon the vertical ends of the channel side pieces specially-formed pedestals adapted to receive and hold springs, journal-boxes, and journals.

Further, it consists in forming the pedestals of metal and with the necks located at right angles to the jaws and adapted to be removably secured by rivets upon the vertical ends of the channel side pieces and to the webs thereof.

Still further, it consists in forming the pedestals of wrought or cast metal having jaws open at the bottom and necks or extensions upon one side integral with the pedestals, so they can be secured upon the vertical ends of the side pieces and removed when distorted and repaired or other similar pedestals substituted.

Finally, it consists in certain novel ways of constructing the various parts to the pedestal,

of joining the channel-transoms to the side channels, and of forming and combining the several elements and parts substantially as hereinafter set forth.

The accompanying drawings illustrate, by way of example, a truck-frame which physically embodies our invention, said frame being shown in connection with the wheels, journal-boxes, and springs; but we do not by reason of the absence of other specific examples of the physical embodiment of our improvements intend to exclude other examples and other similar modes of the application of the principle.

Figure 1 is a side view in elevation of a car-truck, showing the wheels, journal-boxes, one side piece or channel, the edge of one of the gusset or stiffening plates, two of the metallic pedestals located upon the vertical ends of the side channel and with their necks or extensions riveted to the same, and coiled or helical springs resting upon the tops of the boxes and with their upper ends bearing against removable caps, which latter in turn bear against the under surfaces of the pedestal-heads. Fig. 2 is a one-half top plan view of Fig. 1, showing the channel-transoms, one of the gusset-plates, the axles, and the tops of the pedestals. The other half of the truck being of identical construction is not shown.

The main parts of the frame of the truck we construct of relatively heavy iron or steel beams or shapes pressed or rolled, preferably the latter, and of a channel shape with heavy or wide upper and lower flanges or chords, such weights and sizes being selected as can easily and cheaply be purchased in open market or easily manufactured by the use of dies. We prefer to use steel channels of from ten inches to fifteen inches in depths, the greatest depth of beam consistent with other conditions to which it is necessary to conform being selected.

The beams for the transoms may be of greater weight and have wider flanges than those which constitute the side pieces, inasmuch as the transoms support the entire weight of the car and load, whereas the weight is distributed between the two side pieces, and consequently they may be of lighter sections. The ends of the transom-beams may be bent outwardly or on a curve in any well-known way by heating and subjecting them to pressure in a press or bending-machine. The ends of these transoms are joined to the side channels by rivets and by rolled flat plates riveted in position both to the flanges of the transoms and the flanges of the side pieces for stiffening the union of the parts and assisting in transferring the weight of the load from the transoms to the side channels.

To the vertical ends of the side channel-pieces are fastened the pedestals by bolts or rivets, so that a broken or bent pedestal may be detached and a perfect one substituted therefor. When the bent ends of the transoms are shorter than the side channels or pieces—that is, do not extend to the ends of the side channels—the pedestals are to be attached to the side channels or pieces only. The pedestals themselves are formed with necks located at right angles to the pedestal-jaws, through which necks are made holes for the passage of bolts or rivets which unite them to the channel side pieces. When corrugated beams are used, the pedestal-necks are also corrugated or shaped to fit the corrugations of the beams. We make these pedestals of wrought or cast metal, preferably the latter, of any desirable configuration or dimensions. One of the jaws—that adjacent to the channel end—should, preferably, be integral with the head of the pedestal. Between the jaws a space is provided for a coiled or helical spring and for a journal-box upon the top of which the spring rests, the top end of the spring bearing against the under surface of the head of the pedestal or against an interposed cap. The journal-boxes have vertical movement between the jaws of the pedestals. Flanges integral with the neck, head, and jaws and of any suitable form or shape or dimensions are added to secure the requisite strength throughout the pedestal.

Referring to the specific example of the physical embodiment of our invention shown by the figures of the drawings, the numeral 1 designates the transoms made of rolled metallic channel-beams spaced apart and located with their webs in parallel vertical planes between the pairs of wheels and axles and with their top and bottom flanges extending outwardly; 2, the bent ends of the channel-transoms; 3, one of the rolled metallic channel side pieces located outside the wheels and having its top flange and web at the ends perforated to receive rivets, the ends of said channel being plain and cut off through the flanges and web on substantially vertical lines; 4, one of the stiffening or gusset plates which laps over the flanges of the transoms and a channel side piece; 5, rivets which secure the gusset-plate to the flanges of the transoms and the channel side piece; 6, a center plate of any construction which normally takes the entire weight of the car and load; 7, the rivets by which the center plate is secured to the transoms midway of their ends; 8, the metallic pedestals, preferably of cast metal; 9, the pedestal necks or extensions, each on one side of a pedestal only and disposed at a right angle to the jaws or bearing-flanges of the pedestal, the said neck being perforated for the reception of rivets; 10, rivets which secure the pedestal-necks to the webs of the channel side pieces and which rivets in this instance also pass through the bent ends of the transoms; 11, the inner ped-

estal-jaws; 12, the outer pedestal-jaws; 13, the inner laterally-projecting bearing-flanges of the pedestals, which are seated within recesses in the sides of the journal-boxes and guide the same in their vertical movements and prevent their endwise movements; 14, the outer laterally-projecting bearing-flanges similar to the inner flanges in structure and function; 15, the top horizontal bearing-flanges for the removable caps, the said flange 15 being continuous with the inner and outer bearing-flanges of the pedestal and forming a continuous ∩-shaped flange, as shown; 16, the lower inner strengthening-flanges; 17, the outer strengthening-flanges, each at a right angle to the outer bearing-flange; 18, the top strengthening-flanges, each extending over the top of the cap and spring or springs and integral with the bearing-flange 15, as shown; 19, the slotted and perforated lower ends of the inner jaws; 20, the slotted and perforated lower ends of the outer jaws; 21, the pedestal tie-pieces, perforated at the ends; 22, bolts which secure the tie-pieces in place; 23, the removable caps; 24, recesses in the caps to receive the flanges 15 of the pedestals; 25, the seats in the caps to receive and hold in position the top ends of the springs; 26, the coiled or helical springs; 27, the axles; 28, the journals; 29, the wheels; 30, the journal-boxes, and 31 are the vertical flanges upon the opposite sides of a journal-box, which flanges engage the inner and outer bearing-flanges of a pedestal, said flanges upon the journal-box forming recesses within which said pedestal bearing-flanges are located.

The frame viewed as an organized whole is a very strong and rigid metallic structure comprised of parallel sides each located outside the wheel and transoms located between the pairs of wheels and axles and rigidly united to the sides. Each of the two sides has a deep web with horizontal flanges and detachable cast-metal pedestals at the free ends resting upon caps, which in turn bear upon helical springs resting upon the tops of the journal-boxes, which latter have vertical movement between the jaws of the pedestals and are restrained against endwise movement by the bearing-flanges of the pedestal-jaws. The transoms are heavy metallic channels with wide horizontally-disposed flanges and deep webs, which channels are united to each other at their centers and at their ends to the sides and are adapted to support a great weight taken primarily by the center plate and thereafter transmitted to the sides, springs, journal-boxes, wheels, and the track-rails.

The frame is obviously adapted to successfully withstand great vertical strains incident to a heavily-loaded car in motion and the severe horizontal strains and shocks to which it may be subjected in buffing and in the application of the brake-shoes when located on the inside of the wheels, inasmuch as the fillets where the flanges join the webs of the beams form, with the flanges, strong upper and lower chords, and the wide horizontally-disposed top and bottom flanges prevent bending in a horizontal plane.

It will be observed that each pedestal abuts against the entire vertical end of a side channel-piece; that the lower flanges of the side pieces are located below the tops of the journal-boxes, so that the sides will take the horizontal strains and thrusts imparted by the journal-boxes in straight lines; that the ends of the upper channel-flanges are located adjacent the points where the strains are transmitted from the top ends of the springs to the pedestal-heads; that in manufacture the transoms and side pieces may be raised or lowered several inches by raising or lowering the pedestal-necks relative to the jaws, so as to adapt the truck for cars having relatively high or low body-bolsters; that the ends of the sides are free and not united outside the wheels, though they may be so united in some instances to furnish supports for brake and other attachments, and that the pedestals are provided with wide strengthening-flanges.

The main parts of the frame, embracing the transoms and sides, constructed substantially as described of flanged metallic beams of proper depth and wide or heavy flanges combined with the cast pedestals, strengthened with wide flanges, form a structure which is practically indestructible and adapted for use under cars of from sixty thousand to one hundred thousand pounds capacity. The frame will keep its shape when subjected to very severe strains whether the wheels are on or off the track, and thus will require practically no repairs. The pedestals are the only elements subjected to wear and liable to become bent or broken, and these we have purposely formed separate from the sides, so that substitution can easily and cheaply be made.

The example of truck-frame and parts thereof, inclusive of the pedestals illustrated by the drawings, is given to show one mode of construction to attain the purposes or ends hereinbefore set forth. It does not, however, disclose all methods or modes of the embodiment of the invention. While we have shown by the drawings channel-beams and with their flanges extending outwardly as constituting the main elements of the frame, other and preferably merchant shapes may be employed, such as I, L, T, Z, and U, and other beams. Changes may also be made in the form or shape, proportions, dimensions, disposition, construction, and number of the several parts and the organized structure still fall within the scope of our invention, and we shall regard such modifications as colorable when our steps of constructing and

combining are substantially followed for attaining the same or substantially the same purposes or ends.

What we claim is—

1. The combination in a composite truck-frame structure, of two channel-beam transoms, said transoms located between the pairs of wheels, with their webs in vertical planes and flanges extending outwardly, and provided with means for supporting the end of a car-body; two channel side pieces located outside the wheels with their flanges extending outwardly, and secured to the channel-transoms, the ends of the said side pieces being cut off through the webs and flanges so as to form plain ends; and metallic pedestals each having vertical jaws open at the bottom, a head fashioned at its under surface to receive a removable cap, and a neck or extension on one side only, and said pedestals secured upon the extreme ends of the channel side pieces by rivets passed through the extensions of the pedestals and the ends of the channel side pieces.

2. The combination in a composite truck-frame structure, of two channel-beam transoms, said transoms located between the pairs of wheels, with their webs in vertical planes and flanges extending outwardly, and provided with means for supporting the end of a car-body; two channel side pieces located outside the wheels with their flanges extending outwardly, and secured to the channel-transoms, the ends of the said side pieces being cut off through the webs and flanges so as to form plain ends; and metallic pedestals each having vertical jaws open at the bottom and with bearing-flanges, a head fashioned at its under surface to receive a removable cap, and an extension on one side only, and said pedestals secured upon the extreme ends of the channel side pieces by rivets passed through the extensions of the pedestals and the webs of the channel side pieces.

3. The combination in a composite truck-frame structure, of two channel-beam transoms, said transoms located between the pairs of wheels, with their webs in vertical planes and flanges extending outwardly, and provided with means for supporting the end of a car-body; two channel side pieces located outside the wheels with their flanges extending outwardly, and secured to the channel-transoms, the ends of the said side pieces being cut off through the webs and flanges so as to form plain ends; and metallic pedestals each having vertical jaws with bearing-flanges open at the bottom, a neck or extension on one side only and at right angles to the jaws, strengthening-flanges for the outer jaw and pedestal-head, which latter is fashioned at its under surface to receive a removable cap, and said pedestals secured upon the extreme ends of the channel side pieces by rivets passed through the extensions of the pedestals and the webs of the channel side pieces.

4. The combination in a composite truck-frame structure, of two channel-beam transoms, said transoms located between the pairs of wheels, with their webs in vertical planes and flanges extending outwardly, and provided with means for supporting the end of a car-body; two channel side pieces located outside the wheels with their flanges extending outwardly, and secured to the channel-transoms, the ends of the said side pieces being cut off through the webs and flanges so as to form plain ends; and metallic pedestals each having vertical jaws open at the bottom, a head fashioned at its under surface to receive a removable cap, and an extension on one side only, and said pedestals secured upon the extreme ends of the channel side pieces, so as to abut the entire vertical ends of the side pieces, by rivets passed through the extensions of the pedestals and the webs of the channel side pieces.

5. The combination in a composite truck-frame structure, of two channel-beam transoms, said transoms located between the pairs of wheels, with their webs in vertical planes and flanges extending outwardly, and provided with means for supporting the end of a car-body; two channel side pieces located outside the wheels with their flanges extending outwardly, and secured to the channel-transoms, the ends of the said side pieces being cut off through the webs and the flanges so as to form plain ends; and metallic pedestals each having vertical jaws with an opening between the same for a journal-box and spring, said opening being bounded by a ∩-shaped flange, strengthening-flanges for the outer jaw and head of the pedestal, and a neck or extension on one side only, and said pedestals secured upon the extreme ends of the channel side pieces by rivets passed through the extensions of the pedestals and the ends of the channel side pieces.

6. The combination in a composite car-truck-frame structure, of two channel-beam transoms with their webs in vertical planes and located between the pairs of wheels; means secured to the transoms for supporting the end of a car-body; two channel side pieces located outside the wheels and secured to the channel-transoms, the ends of said side pieces being plain and having substantially straight edges; and cast-metal pedestals, each having vertical jaws open at the bottom, a head fashioned at its under surface to receive a removable cap, and a neck or extension on one side only, and said pedestals secured upon the extreme ends of the channel side pieces by rivets passed through the extensions of the pedestals and the ends of the channel side pieces.

7. The combination in a composite car-truck-frame structure, of two channel-beam

transoms with their webs in vertical planes and located between the pairs of wheels; means secured to the transoms for supporting the end of a car-body; two channel side pieces located outside the wheels and secured to the channel-transoms, the ends of said side pieces being plain and having substantially straight edges; and cast-metal pedestals, each having vertical jaws open at the bottom and with bearing-flanges, a head fashioned at its under surface to receive a removable cap, and an extension on one side only, and said pedestals secured upon the extreme ends of the channel side pieces by rivets passed through the extensions of the pedestals and the webs of the channel side pieces.

8. The combination in a composite car-truck-frame structure, of two channel-beam transoms with their webs in vertical planes and located between the pairs of wheels; means secured to the transoms for supporting the end of a car-body; two channel side pieces located outside the wheels and secured to the channel-transoms, the ends of said pieces being plain and having substantially straight edges; and cast-metal pedestals, each having vertical jaws with bearing-flanges open at the bottom, a neck or extension on one side only and at right angles to the jaws, strengthening-flanges for the outer jaw and pedestal-head, which latter is fashioned at its under surface to receive a removable cap, and said pedestals secured upon the extreme ends of the channel side pieces by rivets passed through the extensions of the pedestals and the webs of the channel side pieces.

9. The combination in a composite car-truck-frame structure, of two channel-beam transoms with their webs in vertical planes and located between the pairs of wheels; means secured to the transoms for supporting the end of a car-body; two channel side pieces located outside the wheels and secured to the channel-transoms, the ends of said side pieces being plain and having substantially straight edges; and cast-metal pedestals, each having vertical jaws open at the bottom, a head fashioned at its under surface to receive a removable cap, and an extension on one side only, and said pedestals secured upon the extreme ends of the channel side pieces, so as to abut the entire vertical ends of the side pieces, by rivets passed through the extensions of the pedestals and the webs of the channel side pieces.

10. The combination in a composite car-truck-frame structure, of two channel-beam transoms with their webs in vertical planes and located between the pairs of wheels; means secured to the transoms for supporting the end of a car-body; two channel side pieces located outside the wheels and secured to the channel-transoms, the ends of said side pieces being plain and having substantially straight edges; and cast-metal pedestals, each having vertical jaws with an opening between the same for a journal-box and spring, said opening being bounded by a ∩-shaped flange, strengthening-flanges for the outer jaw and head of the pedestal, and a neck or extension on one side only, and said pedestals secured upon the extreme ends of the channel side pieces by rivets passed through the extensions of the pedestals and the ends of the channel side pieces.

11. The combination in a composite car-truck-frame structure, of two channel-beam transoms with their webs in vertical planes and located between the pairs of wheels; means in connection with the transoms for supporting the end of a car-body; two flanged side pieces located outside the wheels and secured to the channel-transoms, the ends of said side pieces being cut off or fashioned so as to form plain ends and straight edges; and cast-metal pedestals, each having vertical jaws open at the bottom, a head fashioned at its under surface to receive a removable cap, and a neck or extension on one side only, and said pedestals secured upon the extreme ends of the side pieces by rivets passed through the extensions of the pedestals and the ends of the side pieces.

12. The combination in a composite car-truck-frame structure, of two channel-beam transoms with their webs in vertical planes and located between the pairs of wheels; means in connection with the transoms for supporting the end of a car-body; two flanged side pieces located outside the wheels and secured to the channel-transoms, the ends of said side pieces being cut off or fashioned so as to form plain ends with straight edges; and cast-metal pedestals, each having vertical jaws open at the bottom and with bearing-flanges, a head fashioned at its under surface to receive a removable cap, and an extension on one side only, and said pedestals secured upon the extreme ends of the side pieces by rivets passed through the extensions of the pedestals and the webs of the side pieces.

13. The combination in a composite car-truck-frame structure, of two channel-beam transoms with their webs in vertical planes and located between the pairs of wheels; means in connection with the transoms for supporting the end of a car-body; two flanged side pieces located outside the wheels and secured to the channel-transoms, the ends of said pieces being cut off or fashioned so as to form plain ends with straight edges; and cast-metal pedestals, each having vertical jaws with bearing-flanges open at the bottom, a neck or extension on one side only and at right angles to the jaws, strengthening-flanges for the outer jaw and pedestal-head which latter is fashioned at its under surface to receive a removable cap, and said pedestals secured upon the extreme ends of the

side pieces by rivets passed through the extensions of the pedestals and the webs of the side pieces.

14. The combination in a composite car-truck-frame structure, of two channel-beam transoms with their webs in vertical planes and located between the pairs of wheels; means in connection with the transoms for supporting the end of a car-body; two flanged side pieces located outside the wheels and secured to the channel-transoms, the ends of said side pieces being cut off or fashioned so as to form plain ends with straight edges; cast-metal pedestals, each having vertical jaws open at the bottom, a head fashioned at its under surface to receive a removable cap, and an extension on one side only, and said pedestals secured upon the extreme ends of the side pieces, so as to abut the entire vertical ends of the side pieces, by rivets passed through the extensions of the pedestals and the webs of the side pieces.

15. The combination in a composite car-truck-frame structure, of two channel-beam transoms with their webs in vertical planes and located between the pairs of wheels; means in connection with the transoms for supporting the end of a car-body; two flanged side pieces located outside the wheels and secured to the channel-transoms, the ends of said side pieces being cut off or fashioned so as to form plain ends with straight edges; and cast-metal pedestals, each having vertical jaws with an opening between the same for a journal-box and spring, said opening being bounded by a ∩-shaped flange, strengthening-flanges for the outer jaw and head of the pedestal, and a neck or extension on one side only, and said pedestals secured upon the extreme ends of the side pieces by rivets passed through the extensions of the pedestals and the ends of the side pieces.

16. The combination in a composite car-truck-frame structure, of two flanged transom-beams with their webs in vertical planes and located between the pairs of wheels; means in connection with said transoms to support the end of a car-body; two flanged side pieces located outside the wheels and secured to the flanged transoms, the ends of said flanged side pieces being fashioned for the reception of pedestals upon their extreme ends; and cast-metal pedestals, each having vertical jaws open at the bottom, a head fashioned at its under surface to receive a removable cap, and a neck or extension on one side only, and said pedestals secured upon the extreme ends of the side pieces by rivets passed through the extensions of the pedestals and the ends of the said side pieces.

17. The combination in a composite car-truck-frame structure, of two flanged transom-beams with their webs in vertical planes and located between the pairs of wheels; means in connection with said transoms to support the end of a car-body; two flanged side pieces located outside the wheels and secured to the flanged transoms, the ends of said flanged side pieces being fashioned for the reception of pedestals upon their extreme ends; and cast-metal pedestals, each having vertical jaws open at the bottom and with bearing-flanges, a head fashioned at its under surface to receive a removable cap, and an extension on one side only, and said pedestals secured upon the extreme ends of the side pieces by rivets passed through the extensions of the pedestals and the webs of the side pieces.

18. The combination in a composite car-truck-frame structure, of two flanged transom-beams with their webs in vertical planes and located between the pairs of wheels; means in connection with said transoms to support the end of a car-body; two flanged side pieces located outside the wheels and secured to the flanged transoms, the ends of said flanged side pieces being fashioned for the reception of pedestals upon their extreme ends; and cast-metal pedestals, each having vertical jaws with bearing-flanges open at the bottom, a neck or extension on one side only and at right angles to the jaws, strengthening-flanges for the outer jaw and pedestal-head which latter is fashioned at its under surface to receive a removable cap, and said pedestals secured upon the extreme ends of the side pieces by rivets passed through the extensions of the pedestals and the webs of the side pieces.

19. The combination in a composite car-truck-frame structure, of two flanged transom-beams with their webs in vertical planes and located between the pairs of wheels; means in connection with said transoms to support the end of a car-body; two flanged side pieces located outside the wheels and secured to the flanged transoms, the ends of said flanged side pieces being fashioned for the reception of pedestals upon their extreme ends; and cast-metal pedestals, each having vertical jaws open at the bottom, a head fashioned at its under surface to receive a removable cap, and an extension on one side only, and said pedestals secured upon the extreme ends of the side pieces, so as to abut the entire vertical ends of the side pieces, by rivets passed through the extensions of the pedestals and the webs of the side pieces.

20. The combination in a composite car-truck-frame structure, of two flanged transom-beams with their webs in vertical planes and located between the pairs of wheels; means in connection with said transoms to support the end of a car-body; two flanged side pieces located outside the wheels and secured to the flanged transoms, the ends of said flanged side pieces being fashioned for the reception of pedestals upon their extreme ends; and cast-metal pedestals, each having

vertical jaws with an opening between the same for a journal-box and spring, said opening being bounded by a ∩-shaped flange, strengthening-flanges for the outer jaw and head of the pedestal, and a neck or extension on one side only, and said pedestals secured upon the extreme ends of the side pieces by rivets passed through the extensions of the pedestals and the ends of the said side pieces.

21. The combination in a composite car-truck-frame structure, of flanged-beam transoms located between the pairs of wheels; means in connection with the transom-beams for supporting the end of a car-body; two channel side pieces located outside the wheels and secured to the flanged transoms, the ends of the said side pieces being cut off through the webs and flanges or fashioned square; and metallic pedestals, each having vertical jaws open at the bottom, a head fashioned at its under surface to receive a removable cap, and a neck or extension on one side only, and said pedestals secured upon the extreme ends of the side pieces by rivets passed through the extensions of the pedestals and the ends of the said side pieces.

22. The combination in a composite car-truck-frame structure, of flanged-beam transoms located between the pairs of wheels; means in connection with the transom-beams for supporting the end of a car-body; two channel side pieces located outside the wheels and secured to the flanged transoms, the ends of the said side pieces being cut off through the webs and flanges or fashioned square; and metallic pedestals, each having vertical jaws open at the bottom and with bearing-flanges, a head fashioned at its under surface to receive a removable cap, and an extension on one side only, and said pedestals secured upon the extreme ends of the side pieces by rivets passed through the extensions of the pedestals and the webs of the said side pieces.

23. The combination in a composite car-truck-frame structure, of flanged-beam transoms located between the pairs of wheels; means in connection with the transoms for supporting the end of a car-body; two channel side pieces located outside the wheels and secured to the flanged transoms, the ends of the said side pieces being cut off through the webs and flanges or fashioned square; and metallic pedestals, each having vertical jaws with bearing-flanges open at the bottom, a neck or extension on one side only and at right angles to the jaws, strengthening-flanges for the outer jaw and pedestal-head, which latter is fashioned at its under surface to receive a removable cap, and said pedestals secured upon the extreme ends of the side pieces by rivets passed through the extensions of the pedestals and the webs of the said side pieces.

24. The combination in a composite car-truck-frame structure, of flanged-beam transoms located between the pairs of wheels, means in connection with the transom-beams for supporting the end of a car-body; two channel side pieces located outside the wheels and secured to the flanged transoms, the ends of the said side pieces being cut off through the webs and flanged or fashioned square; and metallic pedestals, each having vertical jaws open at the bottom, a head fashioned at its under surface to receive a removable cap, and an extension on one side only, and said pedestals secured upon the extreme ends of the side pieces, so as to abut the entire vertical ends of the side pieces, by rivets passed through the extensions of the pedestals and the webs of the side pieces.

25. The combination in a composite car-truck-frame structure, of flanged-beam transoms located between the pairs of wheels; means in connection with the transom-beams for supporting the end of a car-body; two channel side pieces located outside the wheels and secured to the flanged transoms, the ends of the said side pieces being cut off through the webs and flanges or fashioned square; and metallic pedestals, each having vertical jaws with an opening between the same for a journal-box and spring, said opening being bounded by a ∩-shaped flange, strengthening-flanges for the outer jaw and head of the pedestal, and a neck or extension on one side only, and said pedestals secured upon the extreme ends of the side pieces by rivets passed through the extensions of the pedestals and the ends of the side pieces.

26. The combination in a composite car-truck-frame structure, of a transom or transoms located between the pairs of wheels and provided with means for supporting the end of a car-body; two wrought-metal flanged side pieces located outside the wheels and secured to the transom or transoms, the ends of said side pieces being plain and with the webs perforated; and cast-metal pedestals, each having vertical jaws open at the bottom, a head fashioned at its under surface to receive a removable cap, and a neck or extension on one side only, and said pedestals secured upon the extreme ends of the side pieces by rivets passed through the extensions of the pedestals and the ends of the side pieces.

27. The combination in a composite car-truck-frame structure of a transom or transoms located between the pairs of wheels and provided with means for supporting the end of a car-body; two wrought-metal flanged side pieces located outside the wheels and secured to the transom or transoms, the ends of said side pieces being plain and with the webs perforated; and cast-metal pedestals each having vertical jaws open at the bottom and with bearing-flanges, a head fashioned at its under surface to receive a removable cap, and an extension on one side only, and said pedestals secured upon the extreme ends of

the side pieces by rivets passed through the extensions of the pedestals and the webs of the said side pieces.

28. The combination in a composite car-truck-frame structure, of a transom or transoms located between the pairs of wheels and provided with means for supporting the end of a car-body; two wrought-metal flanged side pieces located outside the wheels and secured to the transom or transoms, the ends of said side pieces being plain and with the webs perforated; and cast-metal pedestals, each having vertical jaws with bearing-flanges open at the bottom, a neck or extension on one side only and at right angles to the jaws, strengthening-flanges for the outer jaw and pedestal-head, which latter is fashioned at its under surface to receive a removable cap, and said pedestals secured upon the extreme ends of the side pieces by rivets passed through the extensions of the pedestals and the webs of the side pieces.

29. The combination in a composite car-truck-frame structure, of a transom or transoms located between the pairs of wheels and provided with means for supporting the end of a car-body; two wrought-metal flanged side pieces located outside the wheels and secured to the transom or transoms, the ends of said side pieces being plain and with the webs perforated; and cast-metal pedestals, each having vertical jaws open at the bottom, a head fashioned at its under surface to receive a removable cap, and an extension on one side only, and said pedestals secured upon the extreme ends of the side pieces, so as to abut the entire vertical ends of the side pieces, by rivets passed through the extensions of the pedestals and the webs of the side pieces.

30. The combination in a composite car-truck-frame structure of a transom or transoms located between the pairs of wheels and provided with means for supporting the end of a car-body; two wrought-metal flanged side pieces located outside the wheels and secured to the transom or transoms, the ends of said side pieces being plain and with the webs perforated; and cast-metal pedestals, each having vertical jaws with an opening between the same for a journal-box and spring said opening being bounded by a ∩-shaped flange, strengthening-flanges for the outer jaw and head of the pedestal, and a neck or extension on one side only, and said pedestals secured upon the extreme ends of the said side pieces by rivets passed through the extensions of the pedestals and the webs of the side pieces.

31. The combination in a composite car-truck-frame structure, of flanged-beam transoms with their webs in vertical planes located between the pairs of wheels; means in connection with the transoms for supporting the end of a car-body; two flanged side pieces located outside the wheels and secured to the flanged transoms, the ends of said side pieces being plain and the webs perforated; strengthening or gusset plates riveted to the flanges of the transoms and side pieces at the centers of the latter; and metallic pedestals, each having vertical jaws open at the bottom, a head fashioned at its under surface to receive a removable cap, and a neck or extension on one side only, and said pedestals secured upon the extreme ends of the side pieces by rivets passed through the extensions of the pedestals and the ends of the side pieces.

32. The combination in a composite car-truck-frame structure, of flanged-beam transoms with their webs in vertical planes and located between the pairs of wheels; means in connection with the transoms for supporting the end of a car-body; two flanged side pieces located outside the wheels and secured to the flanged transoms, the ends of said side pieces being plain and fashioned square; strengthening or gusset plates riveted to the flanges of the transoms and side pieces at the centers of the latter; and metallic pedestals, each having vertical jaws open at the bottom and with bearing-flanges, a head fashioned at its under surface to receive a removable cap, and an extension on one side only, and said pedestals secured upon the extreme ends of the side pieces by rivets passed through the extensions on the pedestals and the ends of the side pieces.

33. The combination in a composite car-truck-frame structure, of flanged-beam transoms with their webs in vertical planes and located between the pairs of wheels; means in connection with the transoms for supporting the end of a car-body; two flanged side pieces located outside the wheels and secured to the flanged transoms, the ends of said side pieces being plain, cut off square and the webs perforated; strengthening or gusset plates riveted to the flanges of the transoms and side pieces at the centers of the latter; and metallic pedestals, each having vertical jaws with bearing-flanges open at the bottom, a neck or extension on one side only and at right angles to the jaws; strengthening-flanges for the outer jaw and pedestal-head which latter is fashioned at its under surface to receive a removable cap, and said pedestals secured upon the extreme ends of the side pieces by rivets passed through the extensions of the pedestals and the webs of the side pieces.

34. The combination in a composite car-truck-frame structure, of channel-beam transoms with their webs in vertical planes and located between the pairs of wheels, means in connection with the transoms for supporting the end of a car-body; two channel side pieces having their flanges turned outwardly and located outside the wheels and secured to the channel-transoms, the ends of said side

pieces being plain, cut off square, and with their webs perforated; strengthening or gusset plates riveted to the flanges of the transoms and side pieces adjacent the centers of the latter; and metallic pedestals, each having vertical jaws open at the bottom, a head fashioned at its under surface to receive a removable cap, and an extension on one side only, and said pedestals secured upon the extreme ends of the channel side pieces, so as to abut the entire vertical ends of the side pieces, by rivets passed through the extensions of the pedestals and the webs of the channel side pieces.

35. The combination in a composite car-truck-frame structure, of channel-beam transoms with their webs in vertical planes and located between the pairs of wheels; means in connection with the transoms for supporting the end of a car-body; two channel side pieces located outside the wheels and secured to the channel-transoms, the ends of said side pieces being plain, cut off on straight lines, and with their webs perforated; strengthening or gusset plates riveted to the flanges of the transom and side pieces adjacent the center of the latter; and metallic pedestals, each having vertical jaws with an opening between the same for a journal-box and spring said opening being bounded by a ∩-shaped flange, strengthening-flanges for the outer jaw and head of the pedestal, and a neck or extension on one side only, and said pedestals secured upon the extreme ends of the side pieces by rivets passed through the extensions of the pedestals and the webs of the side pieces.

36. The combination in a truck and with the wheels, axles, journals and journal-boxes, of a composite frame comprising two flanged transom-beams with their webs in vertical planes and located between the pairs of wheels; means in connection with the transoms to support the end of a car-body; two flanged side pieces located outside the wheels and secured to the flanged transoms, the ends of the side pieces having plain webs and flanges; metallic pedestals, each having vertical jaws open at the bottom, a head fashioned at its under surface to receive a cap, and a neck or extension on one side only at right angles to the jaws, said pedestals being secured upon the extreme ends of the side pieces by rivets passed through the extensions of the pedestals and the ends of the side pieces; removable caps; helical springs located upon the tops of the journal-boxes and bearing at their upper ends against the caps; and means for uniting the ends of the pedestal-jaws.

37. The combination in a truck and with the wheels, axles, journals and journal-boxes, of a composite frame comprising two flanged transom-beams with their webs in vertical planes and located between the pairs of wheels; means in connection with the transoms to support the end of a car-body; two flanged side pieces located outside the wheels and secured to the flanged transoms, the ends of the flanged side pieces having plain webs and flanges; metallic pedestals, each having vertical jaws open at the bottom and with bearing-flanges, a head fashioned at its under surface to receive a removable cap, and an extension on one side only, said pedestals being secured upon the extreme ends of the side pieces by rivets passed through the extensions of the pedestals and the webs of the side pieces; removable caps; helical springs located upon the tops of the journal-boxes and bearing at their upper ends against the caps; and means for uniting the ends of the said jaws.

38. The combination in a truck and with the wheels, axles, journals and journal-boxes, of a composite frame comprising two flanged transom-beams with their webs in vertical planes located between the pairs of wheels; means in connection with the transoms to support the end of a car-body; two flanged side pieces located outside the wheels and secured to the flanged transoms, the ends of the flanged side pieces having plain webs and flanges; metallic pedestals each having vertical jaws with bearing-flanges open at the bottom, a neck or extension on one side only, strengthening-flanges for the outer jaw and pedestal-head which latter is fashioned at its under surface to receive a removable cap, said pedestals being secured upon the extreme ends of the side pieces by rivets passed through the extensions of the pedestals and the webs of the side pieces; removable caps; helical springs located upon the tops of the journal-boxes and bearing at their upper ends against the caps; and means for uniting the ends of the pedestal-jaws.

39. The combination in a truck and with the wheels, axles, journals and journal-boxes, of a composite frame comprising two flanged transom-beams with their webs in vertical planes and located between the pairs of wheels; means in connection with the transoms to support the end of a car-body; two channel side pieces located outside the wheels and secured to the flanged transoms, the ends of the channel side pieces having plain webs and flanges and cut off on substantially straight lines; metallic pedestals, each having vertical jaws open at the bottom, a head fashioned at its under surface to receive a removable cap, and an extension on one side only, said pedestals being secured upon the extreme ends of the side pieces, so as to abut the entire vertical ends of the side pieces, by rivets passed through the extensions of the pedestals and the webs of the side pieces; removable caps; helical springs located upon the tops of the journal-boxes and bearing at their upper ends against the caps; and

means for uniting the ends of the pedestal-jaws.

40. The combination in a truck and with the wheels, axles, journals and journal-boxes, of a composite frame comprising two flanged transom-beams with their webs in vertical planes and located between the pairs of wheels; means in connection with the transoms to support the end of a car-body; two flanged side pieces located outside the wheels and secured to the flanged transoms, the ends of the flanged side pieces having plain webs and flanges; metallic pedestals, each having vertical jaws with an opening between the same for a journal-box and spring, said opening being bounded by a ∩-shaped flange, strengthening-flanges for the outer jaw and head of the pedestal, and a neck or extension on one side only, said pedestals being secured upon the extreme ends of the side pieces by rivets passed through the extensions of the pedestals and the ends of the side pieces; removable caps; helical springs located upon the tops of the journal-boxes and bearing at their upper ends against the caps; and means for uniting the ends of the pedestal-jaws.

41. The combination in a car-truck and with the wheels, axles, journals and journal-boxes, of a composite frame comprising a transom or transoms located between the pairs of wheels; means in connection with the transom or transoms to support the end of a car-body; two flanged side pieces located outside the wheels and secured to the transom or transoms, the ends of the side pieces being cut off or fashioned plain; cast-metal pedestals, each having vertical jaws open at the bottom, a seat for a cap at the under surface of the head, and a neck or extension on one side only, said pedestals being secured on the extreme ends of the side pieces by rivets passed through the extensions of the pedestals and the ends of the side pieces; removable caps; helical springs resting upon the journal-boxes and bearing at their upper ends against the caps; and means for uniting the ends of the pedestal-jaws.

42. The combination in a car-truck and with the wheels, axles, journals and journal-boxes, of a composite frame comprising a transom or transoms located between the pairs of wheels; means in connection with the transom or transoms to support the end of a car-body; two flanged side pieces located outside the wheels and secured to the transom or transoms, the ends of the side pieces being cut off or fashioned plain; cast-metal pedestals each having vertical jaws open at the bottom and with bearing-flanges, a head fashioned at its under surface to receive a removable cap, and an extension on one side only, said pedestals being secured upon the extreme ends of the side pieces by rivets passed through the extensions of the pedestals and the webs of the side pieces; removable caps; helical springs resting upon the journal-boxes and bearing at their upper ends against the caps; and means for uniting the ends of the pedestal-jaws.

43. The combination in a car-truck and with the wheels, axles, journals and journal-boxes, of a composite frame comprising a transom or transoms located between the pairs of wheels; means in connection with the transom or transoms to support the end of a car-body; two flanged side pieces located outside the wheels and secured to the transom or transoms, the ends of the side pieces being cut off or fashioned plain; cast-metal pedestals, each having vertical jaws with bearing-flanges open at the bottom, a neck or extension on one side only and at right angles to the jaws, strengthening-flanges for the outer jaw and pedestal-head which latter is fashioned at its under surface to receive a removable cap, said pedestals being secured upon the extreme ends of the side pieces by rivets passed through the extensions of the pedestals and the webs of the side pieces; removable caps; helical springs resting upon the journal-boxes and bearing at their upper ends against the caps; and means for uniting the ends of the pedestal-jaws.

44. The combination in a car-truck and with the wheels, axles, journals and journal-boxes, of a composite frame comprising a transom or transoms located between the pairs of wheels; means in connection with the transom or transoms to support the end of a car-body; two flanged side pieces located outside the wheels and secured to the transom or transoms, the ends of the side pieces being cut off and fashioned square and plain; cast-metal pedestals each having vertical jaws open at the bottom, a head fashioned at its under surface to receive a removable cap, and an extension on one side only, said pedestals being secured upon the extreme ends of the side pieces, so as to abut the entire vertical ends of the side pieces, by rivets passed through the extensions of the pedestals and the webs of the side pieces; removable caps; helical springs resting upon the journal-boxes and bearing at their upper ends against the caps; and means for uniting the ends of the pedestal-jaws.

45. The combination in a car-truck and with the wheels, axles, journals and journal-boxes, of a composite frame comprising a transom or transoms located between the pairs of wheels; means in connection with the transom or transoms to support the end of a car-body; two flanged side pieces located outside the wheels and secured to the transom or transoms, the ends of the side pieces being cut off or fashioned plain; cast-metal pedestals, each having vertical jaws with an opening between the same for a journal-box and spring said opening being bounded by a ∩-shaped flange, strengthening-flanges for the

outer jaw and head of the pedestal, and a neck or extension on one side only, said pedestals being secured upon the extreme ends of the side pieces by rivets passed through the extensions of the pedestals and the ends of the side pieces; removable caps; helical springs resting upon the journal-boxes and bearing at their upper ends against the caps; and means for uniting the ends of the pedestal-jaws.

46. The combination with the vertical end of a car-truck side frame-piece having flanges and its web in a vertical plane, of a metallic pedestal provided with a head fashioned at its under surface to receive a cap, two jaws for engaging the sides of a journal-box said jaws being open at the bottom, and a neck or extension projecting horizontally from one of the jaws and attached to the web of the side piece by rivets, the other and outer jaw constituting the opposite side of the pedestal; a cap bearing against the under surface of the pedestal-head; and means for uniting the ends of the pedestal-jaws; the arrangement being such that the jaws will receive a journal-box and that a spring may be interposed between the box and the cap.

47. The combination with the vertical end of a car-truck side frame-piece having flanges and its web in a vertical plane, of a metallic pedestal provided with a head fashioned at its under surface to receive a cap, two jaws for engaging the sides of the journal-box, said jaws being open at the bottom, and a neck or extension projecting horizontally from one of the jaws and attached to the web of the side piece by rivets, the other and outer jaw constituting the opposite side of the pedestal; a cap bearing against the under surface of the pedestal-head; means for uniting the ends of the pedestal-jaws; a journal-box; and a spring located between the journal-box and the cap; said jaws being provided with bearing-flanges 13 and 14, in substance as set forth.

48. The combination with the vertical end of a car-truck side frame-piece having flanges and its web in a vertical plane, of a metallic pedestal provided with a head fashioned at its under surface to receive a cap, two jaws for engaging the sides of a journal-box, said jaws being open at the bottom, and a neck or extension projecting horizontally from one of the jaws and attached to the web of the side piece by rivets, the other and outer jaw constituting the opposite side of the pedestal; a cap bearing against the under surface of the pedestal-head; means for uniting the ends of the pedestal-jaws; a journal-box; and a spring between the box and cap; the said head and outer jaw of the pedestal being provided with strengthening-flanges.

49. The combination with the vertical end of a car-truck side frame-piece having flanges and its web in a vertical plane, of a metallic pedestal provided with a head fashioned at its under surface to receive a cap, two jaws for engaging the sides of a journal-box, said jaws being open at the bottom, and a neck or extension projecting horizontally from one of the jaws and attached to the web of the side piece by rivets, the other and outer jaw constituting the opposite side of the pedestal; a cap bearing against the under surface of the pedestal-head; means uniting the ends of the pedestal-jaws; a journal-box; and a spring interposed between the journal-box and cap; said pedestal-head having a vertical strengthening-flange which extends from the outer jaw over the top of the spring and cap to the neck or extension, whereby the head of the pedestal is strengthened.

50. The combination with the vertical end of a car-truck side frame-piece having flanges and the web in a vertical plane, of a cast-metal pedestal provided with a head having a bearing-flange 15 for a cap, two jaws each having a bearing-flange which unite at their upper portions with the flange 15 to form a ∩-shaped flange, said jaws being open at the bottom, a neck or extension projecting horizontally from one of the jaws and attached by rivets to the end of the frame side piece, the other and outer jaw constituting the opposite side of the pedestal, and strengthening-flanges for the outer jaw and top bearing-flange 15, said latter strengthening-flange extending from the upper end of the outer jaw over the pedestal-head to the neck; a removable cap engaging the flange 15; means for closing the ends of the pedestal-jaws; a journal-box; and a spring interposed between the journal-box and the cap.

51. The combination with a car-truck-frame side piece having flanges and a web in a vertical plane, of a metallic pedestal having one side riveted to the vertical end of said side piece and provided with a laterally-projecting flange surrounding the journal-box opening.

52. The combination with a car-truck-frame side piece having flanges and a web in a vertical plane, of a metallic pedestal having one side riveted to the vertical end of said side piece and provided with a laterally-projecting flange surrounding the journal-box opening and strengthening-flanges, as 17 and 18, at right angles to the laterally-projecting flange.

53. The combination with a car-truck-frame side channel-piece cut off or fashioned square at the end, of a metallic pedestal located upon the vertical end of the channel-piece and riveted to the web thereof, said pedestal having a laterally-projecting flange surrounding the journal-box opening.

54. The combination with a car-truck-frame side channel-piece cut off or fashioned square at the end, of a metallic pedestal located upon the vertical end of the channel-

piece and riveted to the web thereof, said pedestal having a laterally-projecting flange surrounding the journal-box opening and strengthening-flanges at right angles to the laterally-projecting flange, said strengthening-flanges extending up the outer jaw and over the pedestal-head.

55. The combination with a car-truck-frame side channel-piece cut off or fashioned square at the end, of a metallic pedestal having a projection on one side only and said projection riveted to the web of the channel end, said pedestal being provided with a laterally-projecting flange surrounding the opening for the journal-box and spring, and a strengthening-flange upon the outer portion and top of the laterally-projecting flange.

In testimony whereof we affix our signatures in presence of two witnesses.

RANSOM C. WRIGHT.
FRANK E. STEBBINS.

Witnesses as to the signature of Ransom C. Wright:

GEO. W. REED,
WM. HENDRICKSON.

Witnesses as to the signature of Frank E. Stebbins:

L. L. JOHNSON,
GEO. W. MANKIN.