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CAR TRUCK SIDE FRAME AND BRAKE HANGER.

APPLICATION FILED DEC. 30, 1907.

905,165. Patented Dec. 1, 1908.

Fig. 1.

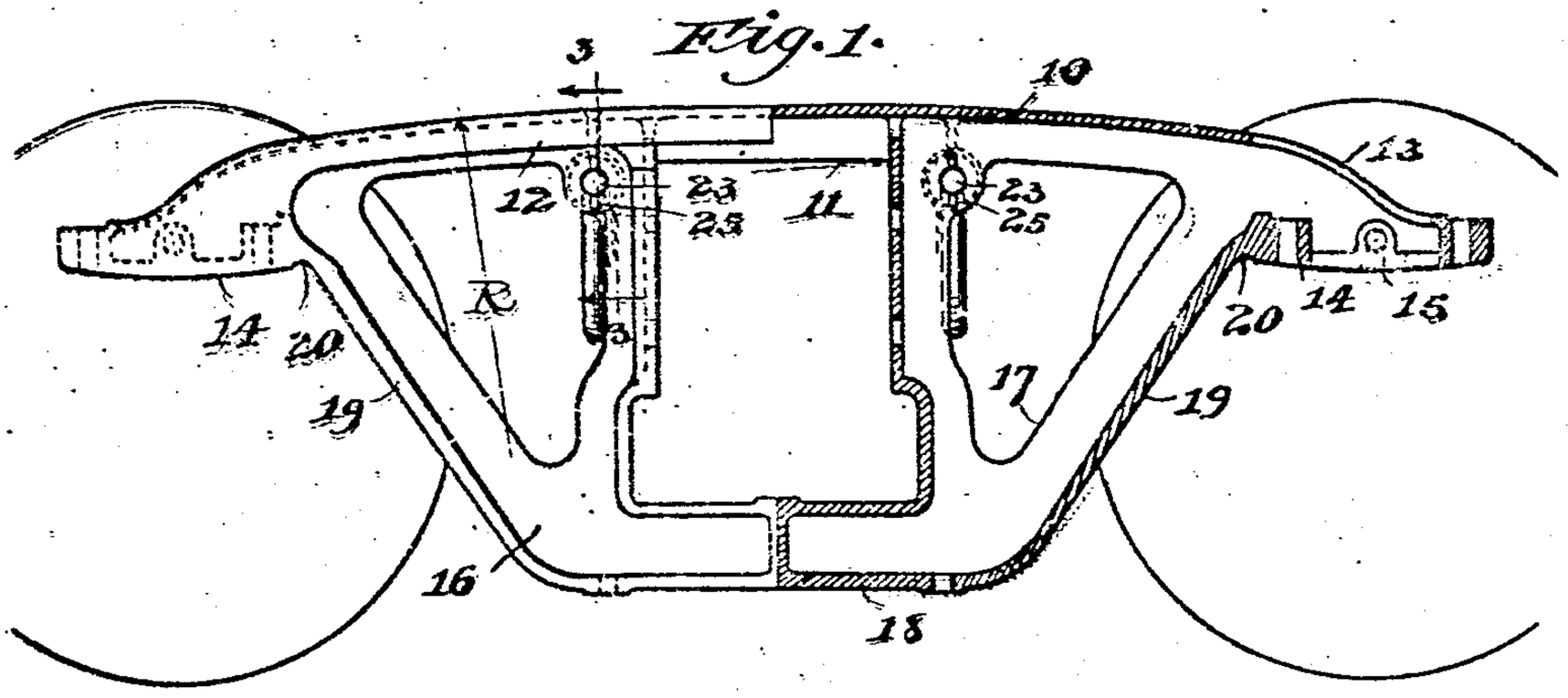


Fig. 2.

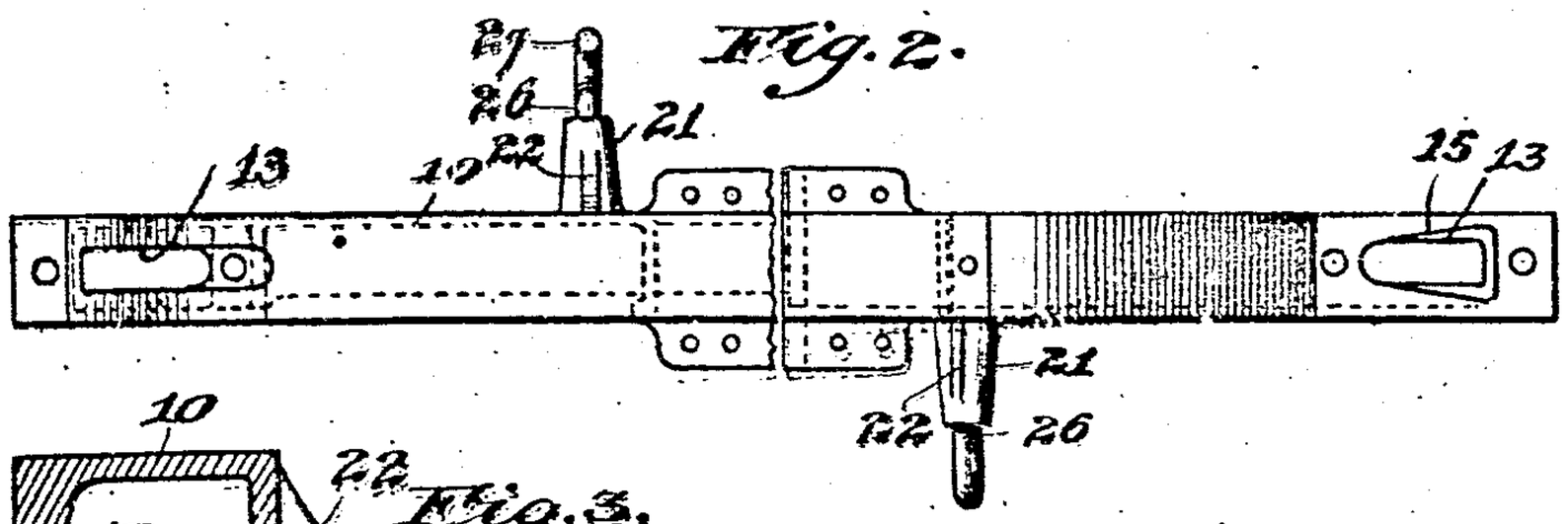


Fig. 3.

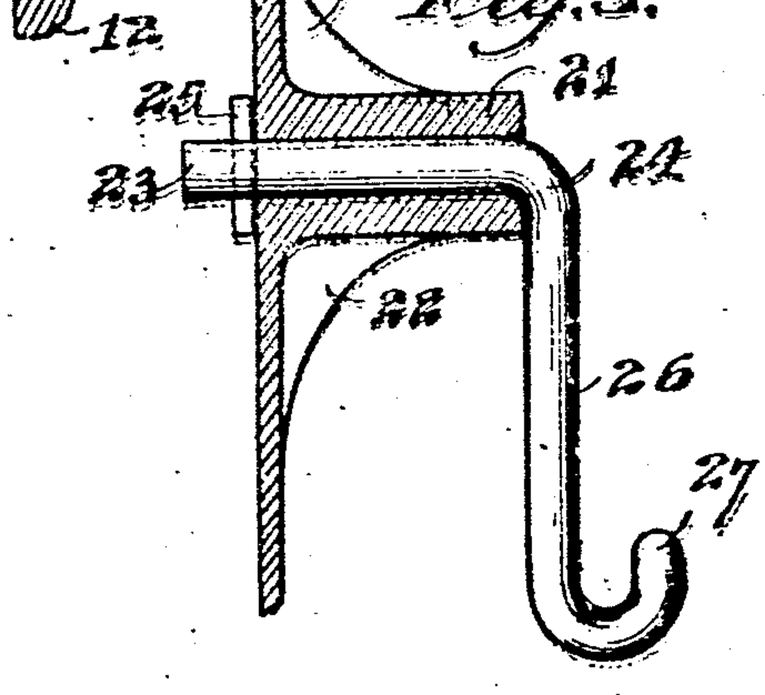
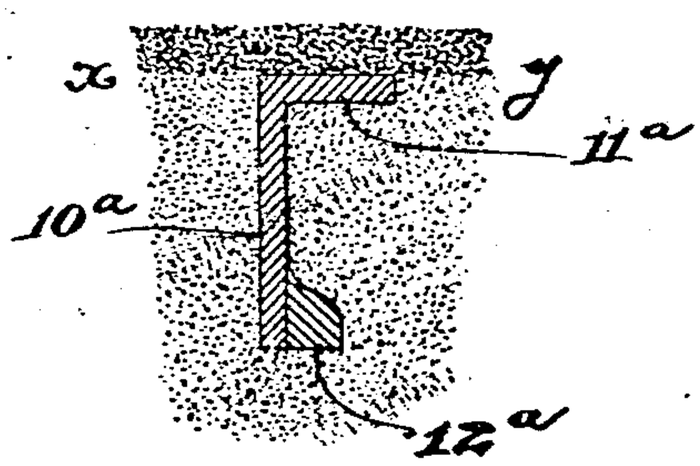


Fig. 4.



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UNITED STATES PATENT OFFICE.

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CAR-TRUCK SIDE FRAME AND BRAKE-HANGER.

No. 905,165. Specification of Letters Patent. Patented Dec. 1, 1908.

Application filed December 30, 1907. Serial No. 408,579.

To all whom it may concern:

Be it known that I, GEORGE G. FLOYD, a citizen of the United States, residing at Granite, in the county of Madison and State of Illinois, have invented certain new and useful Improvements in Railway-Car-Truck Side Frames and Brake-Hangers, of which the following is a specification.

My invention concerns railway car-truck side-frames and brake-hangers, and relates especially to a number of structural features of value and importance.

It has been found desirable and advantageous to make the top compression member of a cast-metal side-frame of channel shape in cross-section, but, in order to do so, it has heretofore been necessary to use a solid dry sand core of approximately 50 in. in length for each frame, the manufacture and positioning of such core in the mold for each frame being a source of considerable expense and annoyance. Another disadvantage of the use of such a core lies in the fact that when the frame cools and shrinks lengthwise against the resistance offered by such core, not infrequently are cracks produced in the casting near the ends of the frame. To avoid the use of such a core and the disadvantages incident to such use I have modified somewhat the cross-sectional shape of the compression portion of the frame without destroying its general channel shape or losing the advantages of such shape of beam. To accomplish this result I make one of the flanges or legs of the channel section, preferably the outer one, much narrower and considerably thicker than is customary, thereby forming what may be called a bulb, and using therein approximately the same amount of metal as in a flange or leg of the ordinary dimensions. Owing to the employment of such contracted, but nevertheless strong, bulb the molders are enabled to ram the sand between the two flanges, or more correctly between the bulb and flange or leg of the channel, sufficiently well so that no dry sand core whatever is required. Since in a mold of this kind there are no junctions between dry and green sand, the cost of finishing and chipping the castings is reduced because there are no fins formed as is usual at such junctions. In my improved pattern for the production of such side-frames, the portion corresponding to the bulb or small thickened flange is divided at the center of the frame and the two parts are separate from the pattern proper. After the pattern has been removed from the sand, the two bulb portions are withdrawn lengthwise in opposite directions, sufficient room or space being provided for this purpose by the cavities produced by the core-prints of the cores forming the openings over the journal-boxes. To secure the best results the compression member of the frame should be curved in accordance with an arc of a true circle.

When the portions of a cast-metal side-frame which are adapted to bear on the tops of the journal-boxes are made flat they are very likely not to be in the same plane or parallel planes, as one end may cock up and the other down. As a result they would not bear level on both boxes alike. To overcome this defect and difficulty I slightly round these surfaces, that is make them convex, whereupon there is secured a true bearing exactly over the middle of each box without the necessity of any chipping or pressing of the ends of the frame up or down. The radius of this circle or curvature is so gaged that it will take care of the usual foundry variation at this point without any further work on the casting. Such a construction also makes doubly sure that the load delivered by the side-frame to the journals will be directly over the centers of the journals through the boxes, wedges, and the brasses.

Instead of constructing the frame so that the tension member leads or starts directly away from those portions of the frame that bear on the tops of the journal boxes, I make a slight depression or groove at each of these junctions so that if either part which bears on the boxes is rough, uneven, untrue, swollen, or strained, and requires chipping, this may be accomplished without cutting into and weakening the tension member, which at these particular points is subjected to considerable and severe strains.

Since the area of the surface of the ordinary railway car-truck side-frame bearing on the top of the journal or oil box is largely in excess of the actual requirements for bearing or crushing value, and since it is sometimes necessary to chip this surface smooth, an expensive operation by the way, I have provided each of these portions of the

frame with a hole extended therethrough, whereby the cost of chipping is greatly reduced when finishing is required.

There is an especial tendency for cracks to appear near the upper ends of the divergent legs of the downwardly-bowed or bellied tension member. To overcome this tendency and reduce the foundry loss occasioned by such defects, I make the outwardly-extended flanges of the legs of the tension member, or at least their upper parts, somewhat thickened, the thickness gradually decreasing downwardly.

I have also devised a new and improved brake-hanger and method of supporting and fastening the same in place. The hanger consists of a vertically hung rod having a hook or loop at its lower end, its upper end being bent at right angles to the vertical strip and inserted in an aperture of the side-frame. A cotter-pin passed through a transverse hole at the inner end of the hanger prevents its outward displacement, while the vertical leg of the hanger itself prevents inward displacement.

On the accompanying drawing, forming a part of this specification, I have illustrated a preferred and desirable embodiment of my invention, and on this drawing Figure 1 is a partial side elevation and partial longitudinal vertical section of a cast-metal railway car-truck side-frame embodying my invention. The left-hand portion of Fig. 2 is a top plan view of the frame shown in Fig. 1, while the right-hand portion of the same figure is a bottom plan view of the same: Fig. 3 is an enlarged vertical section through the brake-hanger on line 3—3 of Fig. 1, as viewed in the direction indicated by the arrow; and Fig. 4 is a fragmentary section through a portion of the mold and the compression member part of the pattern used for the production of the side-frame illustrated in Fig. 1.

The railway car-truck side-frame illustrated is of the same general shape and contour as those now in ordinary use, though it varies materially from the latter in several structural features. The top compression member or portion of the frame 10, which has depending from its inner margin or edge a flange 11 of the ordinary dimensions and from its outer edge an enlargement or bulb 12 (see Fig. 3) considerably narrower and thicker than the flange 11, is bowed or curved upwardly, as is clearly illustrated, in accordance with the arc of a true circle, a portion of the radius of which is shown on Fig. 1. As has been explained in the introduction, the purpose of this curvature is to facilitate the withdrawal or removal of the two parts of the pattern corresponding to the bulb 12. It should be noticed that the top of the frame at each end is supplied with an elongated opening 13, and that the parts 14 of the frame, which are adapted to rest on the tops of the journal boxes, are also supplied with substantially triangular-shaped apertures 15. The core-prints on the pattern which form in the sand recesses or cavities for the support of the cores used for the production of the openings 13 form recesses in the mold sufficiently large to permit the lengthwise withdrawal of the pair of pattern bulb strips 12^a, one of which is illustrated in Fig. 4. In this figure the parting line is indicated at x—y, and the compression portion of the pattern is shown embedded in the sand. The part of the pattern corresponding to the flange 11 of the casting has been characterized 11^a, while the main body of the compression member has been characterized 10^a.

It will be apparent to those skilled in foundry practice that by using a pattern bulb of the shape indicated at 12^a, which occupies a comparatively small space, the molder is enabled to thoroughly ram the sand between the parts 11^a and 12^a so that the green sand alone may be employed for the production of the channel compression member, no dry sand core being used for this part. After the main pattern for the side-frame has been withdrawn from the sand in the usual manner, the two bulb or enlargement strips 12^a are withdrawn lengthwise or endwise in opposite directions through the cavities or recesses produced in the sand by the core-prints at the ends of the frame. This absence of use of a comparatively large dry sand core, and the avoidance of its careful positioning in the mold, means a large financial saving in the production of the side-frames, and this saving is accomplished without sacrificing the strength of the completed frame. Furthermore, since by eliminating the use of the dry sand core no junctions between the same and the green sand are occasioned in the mold, the production of fins on the casting, which have to be chipped off, is also avoided.

Referring again to the surfaces 14 adapted to bear upon the tops of the journal boxes, it will be noted from the drawing that these surfaces are convex or curved longitudinally of the frame. The reason for this construction is that where the two surfaces are flat it is quite difficult to cast the frame so that these surfaces will be in the same plane unless they are chipped or finished in some other manner. By making them curved, as has been indicated, a true bearing can always be secured directly over the middle of each box without any chipping or pressing of the ends of the frame up or down, which insures that the load transmitted through the side-frame to the journals will be directly over the centers of the journals.

The downwardly-bowed or bellied tension

member 16 of the side-frame has a leg 17 in the same vertical plane as the flange 11 of the compression member, and also has an outwardly-extended flange 18, the upwardly-divergent portions of which are characterized 19. Instead of having the ends of this tension member join the surfaces 14 directly, as is customary, I provide the small transverse grooves or recesses 20 at their junctions so that if for any reason the surfaces 14 require chipping or finishing, this can be readily accomplished without cutting into and weakening the tension member at its top ends, which portions of this member are ordinarily subjected to severe strains.

I have indicated above that the under surfaces or walls 14 are provided with substantially-triangular apertures 15, the object being to reduce the amount of surface to be chipped, if for any reason these surfaces require finishing I am enabled to use these apertures without weakening the structure because in the ordinary side-frame the area of the frame bearing on the top of the journal box is considerably larger than is required for the bearing or crushing value. In cast-metal side-frames of this general character there is a tendency for defects and cracks to occur in the legs or flanges 19 of the tension member, and in order to strengthen this part of the frame and prevent the occurrence of such cracks, I have made the upper portions of these flanges or legs thicker than is usual and have tapered the thickness downwardly, as is clearly shown in Fig. 1.

Extended inwardly from the vertical column portions of the side-frame connecting the compression and tension members are a pair of centrally-apertured lubs or bosses 21 integral with the side-frame and strengthened by means of integral brackets or braces 22. The axial bore of each of these bosses passes completely through the wall of the side-frame permitting the inturned leg or portion 23 of a bent brake-hanger rod 24 to pass through the boss and extend somewhat beyond the inner surface of the frame, as is clearly indicated in Fig. 3. This protruding portion of the brake-hanger is transversely apertured and adapted to accommodate a cotter-pin 25 which prevents unintentional withdrawal of the hanger. This hanger has a central vertically-extended part 25 and its lower end may be equipped with a hook 27 or a loop or other form of supporting means. It will be readily apparent to those skilled in the art that each of these hangers is firmly held in place and prevented from dislodgment or displacement by its cotter 25 and its vertical leg or portion 26. This is a particularly simple and convenient form of brake-hanger for use and is readily and economically manufactured, owing to its simple construction.

Although I have described in detail a number of structural features of my improved side-frame and brake-hanger, my invention is nevertheless not limited to the precise construction shown and described, since it may be varied considerably in minor details without departure from the heart and essence of my invention as set forth in the appended claims. For example, instead of providing the apertures 15 for the reduction of the surfaces 14, recesses in the surfaces could be used to accomplish the same result.

I claim:

1. A cast-metal car-truck side-frame having a compression member of general channel shape, one of the flanges or legs of which is in the form of a bulb or thick narrow flange, substantially as described.

2. A cast-metal car-truck side-frame having a compression member curved in substantial accordance with an arc of a true circle, said compression member being of general channel shape in cross-section substantially as described.

3. A cast-metal car-truck side-frame having a compression member of general channel shape curved in substantial accordance with an arc of a true circle, one of the flanges or legs of said compression member being in the form of a bulb or thick narrow flange, substantially as described.

4. A cast-metal car-truck side-frame having the surfaces of those portions thereof adapted to rest on the journal boxes curved longitudinally of the frame, substantially as described.

5. A cast-metal car-truck side-frame having a recess at each of the junctions of the tension member with those portions of the frame adapted to rest on the journal boxes, substantially as described.

6. A cast-metal car-truck side-frame in which those portions adapted to rest on the journal boxes are apertured whereby the surfaces to be chipped if finishing is required are reduced in area, substantially as described.

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