

Feb. 23, 1943.

D. S. BARROWS

2,312,065

RAILWAY TRUCK

Filed Nov. 12, 1940

2 Sheets-Sheet 1

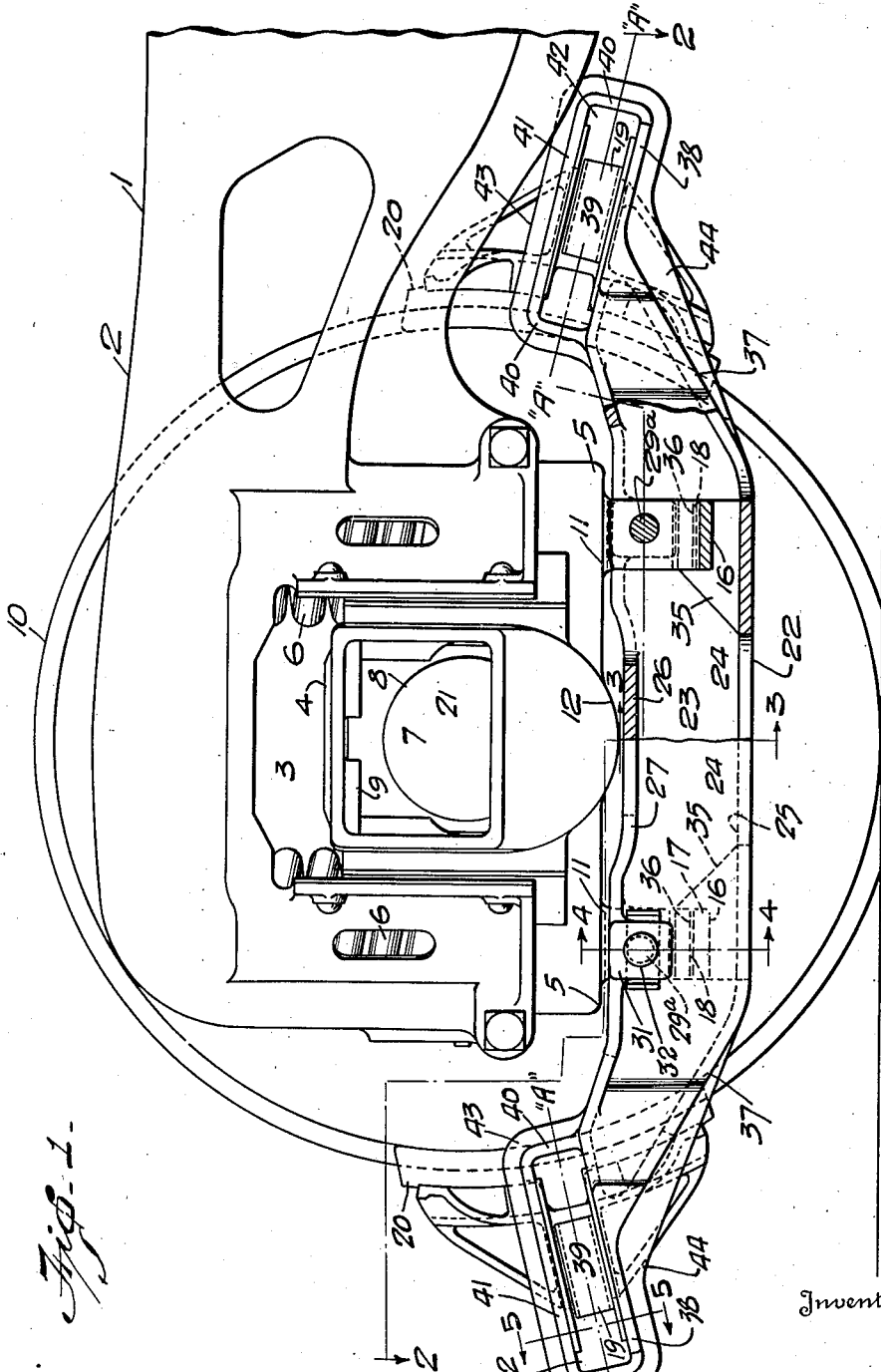


Fig. 1.

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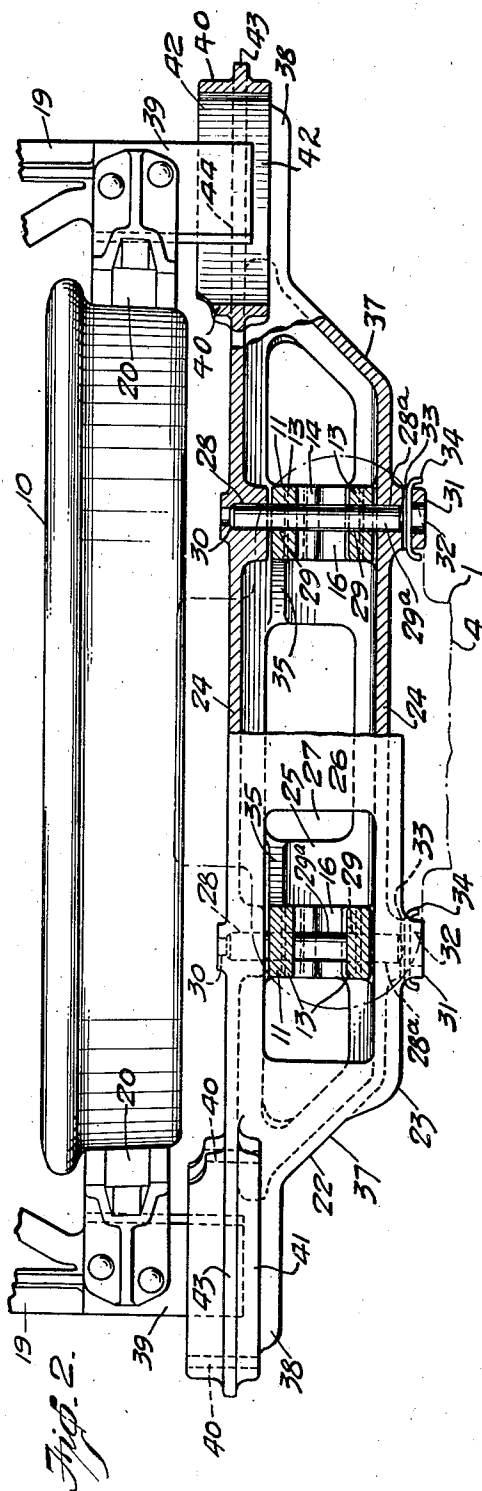
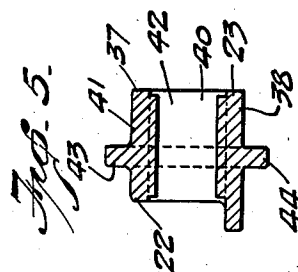
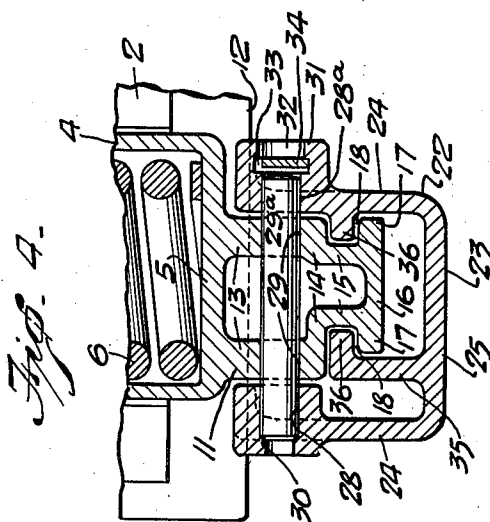
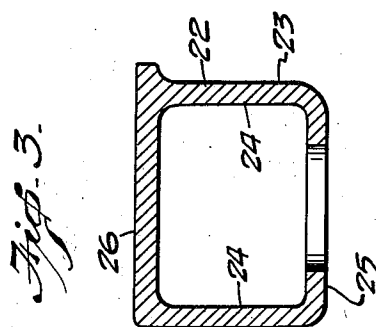
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RAILWAY TRUCK

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2 Sheets-Sheet 2



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## UNITED STATES PATENT OFFICE

2,312,065

## RAILWAY TRUCK

Donald S. Barrows, Rochester, N. Y., assignor to  
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Application November 12, 1940, Serial No. 365,330

24 Claims. (Cl. 188—212)

The invention relates to a railway truck and more particularly to a brake rigging and brake beam support therefor.

An object of the invention is the provision, in a railway truck, of a relatively movable side frame and journal box with a brake beam support carried by the journal box.

Another object of the invention is the provision, in a railway truck, of a side frame and journal box movable vertically relative to one another with a brake beam support for a clasp brake arrangement connected by the journal box so that the brake beams will be maintained in fixed relation with an associated wheel irrespective of the service movements of the side frame.

A further object of the invention is the provision, in a railway truck, of a relatively movable side frame and journal box with a unit casting forming a brake beam support which is pin connected to the journal box and arranged to guide brake beams to and away from a wheel in substantial alignment with the axis of a journal associated with the journal box.

An added object of the invention is the provision, in a railway truck, of a side frame and journal box having a brake beam support removably secured to the journal box in subjacent relation thereto and enclosed guideways in the brake beam support for the accommodation of slidably associated brake beams.

These and other objects of the invention will become apparent from the succeeding description considered together with the accompanying drawings which disclose an exemplified form of the invention and wherein:

Figure 1 is a partial front elevational view and a partial vertical sectional view of a portion of a railway truck embodying a form of the present invention.

Figure 2 is a partial plan and partial horizontal sectional view taken along the lines 2—2 of Figure 1, looking in the direction of the arrows.

Figure 3 is an enlarged transverse sectional view taken along the lines 3—3 of Figure 1, looking in the direction of the arrows.

Figure 4 is an enlarged transverse sectional view taken along the lines 4—4 of Figure 1, looking in the direction of the arrows.

Figure 5 is an enlarged transverse sectional view taken along the lines 5—5 of Figure 1, looking in the direction of the arrows.

Referring now in detail to the drawings wherein like reference characters designate like parts, the numeral 1 is employed to indicate in a general manner a railway truck only a portion of

which is illustrated. As will be clearly understood, the disclosure of Figure 1 is only a portion of a truck with which the present invention may be employed, and for a construction which may constitute the undisclosed portion of the truck reference is made to patents of the type granted to Donald S. Barrows on October 11, 1938, numbered 2,132,382. The railway truck includes a side frame 2, only an extremity of one being illustrated, which has adjacent an end thereof a laterally and downwardly opening pocket 3 for the accommodation of a journal box 4. In the disclosed construction the side frame is arranged and constructed so as to be capable of moving vertically relative to the journal box, and in order to obtain a flexible journal box and side frame connection the journal box is provided with longitudinally extending brackets or shelves 5 adjacent the lower extremity thereof to form rests for spring means of any nature and characterized in the instant structure by the coil springs 6. The springs, as will be understood, have their upper extremities associated with suitable spring seats (not shown) on the side frame and are, therefore, arranged to transmit loads from the side frame to the journal box.

Housed within the journal box is an extremity 7 of an axle 8 which extends between aligned journal boxes of the railway truck. Suitable bearing means (not shown) is interposed between the axle extremity and a roof 9 of the journal box so as to conduct forces or loads from the journal box to the axle and facilitate a free rotative movement of the axle relative to the journal box. Fixed on the axle, inwardly of the truck from the side frame, is a wheel 10 in close proximity to the journal box.

Each journal box is provided with a pendant, bearing or hanger 11 desirably formed or cast integrally therewith to depend below a bottom wall 12 of the journal box. The hangers, which may, if desired, be formed as separate elements and secured to the brackets in any approved manner, are spaced longitudinally of the truck on either side of the transverse center line of the journal box, and each comprises transversely spaced flanges 13 merging into inturned webs 14. Depending from the inner or free extremities of the webs are vertical legs 15 which are joined by a lower or bottom wall 16 extending beyond the horizontal limits of the legs for a predetermined distance, such as at 17, to form outwardly or oppositely facing reliefs or recesses 18, the purpose of which will be hereinafter explained.

By reason of the supporting springs being interposed between the journal box and side frame, these two members will, during service, move relative to one another in a vertical direction. It will be noted that if the brake mechanism, characterized by the brake beams 19, is suspended from the side frame in a conventional manner, a deflection of the springs will cause the side frame and the braking mechanism to move vertically with respect to the journal box and related wheel. Since brake shoes 20, secured to the brake beams and forming parts of the braking mechanism, are in longitudinal alignment with and arranged to contact the wheels in order to control the progress of the truck or retard the speed thereof and the brake shoes are moved in a path the extended plane of which is in alignment with an axis 21 of the axle or substantially therewith and forms an oblique angle with a horizontal plane passing through the axis 21, any vertical movement between the side frame and journal box will create abnormal forces in the braking mechanism and particularly the portions thereof which form connections to the side frame.

In order to prevent or eliminate the creation of the above referred to abnormal forces the present invention contemplates suspending the braking mechanism from the journal box so that irrespective of any possible relative vertical service movements of the journal box and side frame the brake shoes will, at all times, be mounted in a fixed or constant relationship with the wheels. The present embodiment of the invention includes an arrangement adapted to accommodate longitudinally spaced brake beams associated with each wheel and of an order or class commonly called clasp brakes, but it will be definitely understood that, if desired, one of the brake beams and its immediately related supporting structure may be eliminated to thereby render the arrangement suitable for the positioning of a single brake beam adjacent each wheel. As an exemplification of a preferred arrangement, there is provided a unit, cast or integral brake beam support or frame 22 positioned in the main in subjacent relation to the journal box and comprising an intermediate portion, sill or foundation member 23 formed by transversely spaced, vertically disposed side walls 24 joined adjacent their lower extremities by a horizontally disposed bottom wall 25. Connecting the other or upper extremities of the side walls is a top wall 26 to present a sill of box section throughout an appreciable extent thereof, as most clearly illustrated in Figures 2 and 3 of the drawings. The top wall has longitudinally spaced openings 27 which, in their immediate vicinity, change the cross section of the sill to a U-shape, opening upwardly or toward the journal box to permit the introduction of the hangers to the interior of the support.

In order to form a connection between the support and journal box the sill or foundation member side walls are provided with aligned apertures 28, and 28<sup>a</sup> which are longitudinally spaced and coaxially disposed with respect to apertures 29 formed in the transversely spaced flanges 13 of the hangers. Extending through or occupying related apertures is a plurality of pins, keys, rods or shafts 29<sup>a</sup> of a diameter to fit neatly the accommodating apertures so as to firmly or fixedly secure the support to the hangers and eliminate any play or lost motion therebetween. Because of the close proximity of the sill to the wheel it is preferred to employ a headless key or

bolt so that no part will project beyond the limits of the support toward the movable wheel. This, therefore, necessitates the provision of restricting shoulders 30 in the apertures 28 so that the pins may be arrested upon any tendency thereof to shift from a predetermined position outwardly of the sill toward the wheel. The side wall of the intermediate portion carrying the apertures 28<sup>a</sup> has formed thereon cup or cap-shaped clips 31 apertured as at 32 to permit the insertion of the pins in a support-hangers interlocking position. The formation of the clips on the support side wall presents grooves or slots 33 directed longitudinally of the side frame for the accommodation of pin arresting plates 34 bent U-shaped to be thereby interlocked with the clips. In this manner the plates are positioned in the path of the pins and are arranged to arrest an unwarranted or accidental displacement thereof in a direction outwardly of the truck.

As a precautionary measure there has been incorporated into the present structure means which may, at some future time, be brought into use to prevent the brake beam and support therefor from falling upon the rails to cause derailment of the truck. Toward the accomplishment of the above, longitudinally spaced auxiliary standards or inner posts 35 are formed in each support intermediate section upstanding from the bottom wall thereof. The free extremities of the posts as well as the outermost side wall of each support are provided with lips or fingers 36 directed toward one another and extending into the reliefs or rests 18. The fingers are normally spaced from the adjacent portions of the associated pendants and in overlying relation with respect to the bottom wall portions 17 so that, upon an unwarranted or accidental downward movement of the support from the illustrated position the support will be suspended by the portions 17 to prevent the brake beam and the support from reaching a position or falling beneath the wheels.

The bottom, top and side walls merge adjacent the extremities of the brake beam support to form oppositely disposed or directed, inclined or upwardly diverging arms 37 to continue to the horizontal or longitudinal limits of the support as shelves or rests 38 of appreciable area to thereby form lower or bearing plates or rails for extremities 39 of the brake beams 19. Upstanding from and substantially normal to each shelf or rail are spaced end stakes or flanges 40 which are joined at their upper extremities by a top or upper plate 41 disposed parallel to the related rest. The shelf, upper plate and end stakes define a guideway, stirrup or confined area therebetween to accommodate a brake beam extremity and guide the beam throughout the entire range of service movements thereof. A substantially continuous rib 43 outstands from the end stakes and top plate of each brake beam support extremity to reinforce the related stakes and plates against forces to which they will be subjected during service. The shelves or brake beam bearing rails are provided with depending or gusset-shaped ribs 44 which form continuations of the ribs 43 to extend along the bottom wall portions of the adjacent arms and form, in effect, knee braces to rigidify the support. The rests or shelves and upper plate are disposed at an oblique angle to the horizontal, and accordingly since the brake beam extremities are arranged to slidably engage the former when the brake shoes are free of the wheels and either of these members, depending upon the direction

of the rotation of the wheels during a brake application, the brake beams are guided in paths designated by the diagrammatic lines A—A substantially in alignment with the axis of the interposed axle. It will, therefore, be noted that irrespective of vertical service movements of the journal box and side frame the brake beams will, at all times, insofar as their paths of travel are concerned remain fixed with respect to the wheel.

From the foregoing it will be observed that various changes and alterations may be made to the illustrated and described structure of this invention without departing from within the spirit and scope of the appended claims.

I claim:

1. In a car truck having a relatively movable side frame and a journal box, means depending from said journal box, and a brake beam support removably secured to said means and comprising longitudinally spaced guideways inclined with respect to the horizontal and directed toward an axis of a journal associated with said journal box.

2. In a car truck having a relatively movable side frame and a journal box, longitudinally spaced means depending from said journal box, and a brake beam support underlying said journal box and secured to said spaced means, said brake beam support comprising longitudinally spaced guideways positioned outwardly from each side of said journal box and inclined with respect to the horizontal; said guideways being directed toward an axis of a journal housed within said journal box.

3. In a car truck having a side frame and journal box, means underlying and secured to said journal box having guide means positioned outwardly from each side of said journal box, said guide means being arranged and constructed to direct brake beams of a clasp brake arrangement to and away from an axis of a journal associated with said journal box.

4. In a railway truck having a side frame and journal box, a cast means underlying and secured to said journal box having guide means positioned outwardly from each side of the journal box, said guide means being arranged and constructed to direct brake beams of a clasp brake arrangement to and away from an axis of a journal associated with said box, and means formed on said journal box interlocked with and normally spaced from said first named means to form a safety support therefor.

5. In a car truck having a relatively movable side frame and journal box, a brake beam support fixed with respect to and underlying said journal box and comprising an intermediate horizontal portion connected at spaced positions to said journal box, end arms extending beyond the horizontal limits of said journal box, and enclosed guideways formed in said arms for the reception of brake beam extremities.

6. In a car truck having a relatively movable side frame and journal box, a cast brake beam support fixed with respect to and underlying said journal box and comprising an intermediate horizontal portion connected at spaced positions to said journal box, end arms extending beyond the horizontal limits of said journal box, and enclosed guideways formed in said arms for the reception of brake beam extremities; said guideways being inclined to a horizontal and in substantial alignment with an axis of a journal associated with said journal box.

7. In a car truck having a relatively movable side frame and journal box, a cast brake beam

support fixed with respect to and underlying said journal box and comprising an intermediate horizontal portion connected at spaced positions to said journal box, end arms extending beyond the horizontal limits of said journal box, enclosed guideways formed in said arms for the reception of brake beam extremities, and vertically disposed reinforcing means on said end arms.

8. In a car truck having a relatively movable side frame and journal box, a brake beam support fixed with respect to and underlying said journal box and comprising an intermediate portion pin-connected at spaced positions to said journal box, interlocking means formed on said journal box and brake beam support, longitudinally disposed arms forming continuations of said intermediate portion and extending beyond the horizontal limits of said journal box, and enclosed guideways formed in said arms for the reception of brake beam extremities, said guideways being inclined to a horizontal so as to direct said brake beams to and away from an axis of an axle associated with said journal box and in substantial alignment with said axis.

9. In a car truck having a side frame and a journal box with a pair of brackets formed on the journal box for the accommodation of springs supporting the side frame, a bearing depending from each bracket, a brake beam support comprising an intermediate portion, pin means connecting said bearings and intermediate portion, and means forming continuations of said intermediate portion, said last named means each comprising a shelf inclined with respect to said intermediate portion and said shelves forming rests for extremities of brake beams of a clasp brake arrangement.

10. In a car truck having a side frame, a journal box with a pair of brackets formed thereon for the accommodation of springs supporting the side frame, a bearing depending from each bracket, a brake beam support comprising an intermediate portion partially U-shaped in cross section, pin means rigidly connecting said bearings and intermediate portion, grooves formed in said bearings, means in said intermediate portion extending into said grooves, and means forming longitudinal continuations of said intermediate portion and comprising guideways for the reception of brake beam extremities, said guideways being in alignment with an axis of a journal housed in said journal box.

11. In a car truck having a relatively movable side frame and journal box, a brake beam support fixed with respect to and underlying said journal box and comprising a horizontal sill connected at spaced positions to said journal box, an end arm extending beyond one side of said journal box, and an enclosed guideway formed in said arm for the reception of a brake beam extremity.

12. In a car truck having a relatively movable side frame and journal box, a brake beam support fixed with respect to and underlying said journal box and comprising a horizontal sill pin-connected at spaced positions to said journal box, an end arm extending beyond one side of said journal box, an enclosed guideway formed in said arm for the reception of a brake beam extremity, and means formed on said journal box interlocked with and normally spaced from said brake beam support to form a safety device therefor.

13. In a car truck having a relatively movable side frame and journal box, a cast brake beam

support fixed with respect to and underlying said journal box and comprising a horizontal sill key-connected at spaced positions to said journal box, an inclined end arm extending beyond one side of said journal box, an enclosed guideway formed in said arm for the reception of a brake beam extremity, means formed on said journal box interlocked with and normally spaced from said brake beam support to form a safety device therefor, and vertically disposed reinforcing means formed on said arm.

14. In a journal box having shelves outstanding therefrom to form a support for side frame supporting springs, a hanger depending upon each of said shelves, each of said hangers having an aperture for the accommodation of a brake beam support pin.

15. In a journal box having shelves outstanding therefrom to form supports for side frame supporting springs, an integral hanger depending from each of said shelves, each of said hangers having an aperture for the accommodation of a brake beam support pin, and means formed on said hangers to present safety devices for a brake beam support.

16. In an integral brake beam support adapted for rigid attachment to a journal box, the combination of a sill, arms extending longitudinally of said sill, means formed in said sill for the accommodation of securing elements, and inclined guideways formed in said arms to direct brake beams toward and away from wheel-engaging position.

17. In a brake beam support, the combination of a U-shaped sill comprising connected side and bottom walls, said side walls being apertured for the accommodation of pin means, and all of said walls merging adjacent opposite extremities of said sill to form arms for the purpose of maintaining brake beams in a predetermined position.

18. In a brake beam support, the combination of a sill comprising spaced side walls and a connecting bottom wall, said side walls being apertured for the accommodation of connecting pins, some of said apertures being restricted to prevent shifting of said pin means in one direction, means on one of said side walls associated with the rest of said apertures, and means interposed between said first named means and related side wall to prevent shifting of said pin in another direction.

19. In a brake beam support, the combination of a sill comprising spaced side walls joined by a bottom wall, means associated with said bottom

wall and one of said side walls to engage associated means upon movement of said support from a predetermined position, said side and bottom walls merging to form oppositely directed arms, and enclosed guideways in said arms for the accommodation of brake beams.

20. In a brake beam support, the combination of a sill comprising spaced side walls joined by a bottom wall, means associated with said bottom wall and one of said side walls to engage associated means upon movement of said support from a predetermined position, said side and bottom walls merging to form oppositely directed bearing plates, spaced end flanges upstanding from each bearing plate, and an upper plate spaced from each bearing plate and joining associated end flanges to define a guideway therebetween.

21. Brake-supporting means for a railway car truck, including a journal box, a rigid member extending transversely across the bottom of the said box and rigid therewith across said box, and solely supported thereby, one end of such member extended beyond one side of the box, and brake-beam guiding means upon and joining associated end flanges to define a guideway therebetween.

22. Brake-supporting means for a railway car truck, including a journal box, a rigid member supported rigidly by the bottom of the box and having ends projecting for substantially equal distances beyond the opposite sides of the box, and brake-beam guiding means upon and rigid with both of the projecting ends, each guiding means having a length at least equivalent to the extent of travel of the beam.

23. Brake-supporting means for a railway car truck, including a journal box, means on and rigid with the bottom of the box having brake-beam guides extending beyond the opposite sides of the box and supported solely from such means, such guides inclined outwardly and downwardly with respect to the box, and the planes in which such guides extend intersecting within the box.

24. Brake-supporting means for a railway car truck, including a journal box, a bar having a brake-beam guide, means on and rigid with the said box alone for entirely supporting the bar, and means for positively locking the bar removably to the said supporting means in a rigid position in which the guide is located to one side of the box.

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