Oct. 30, 1934. J. J. TATUM 1,979,235

CAR TRUCK

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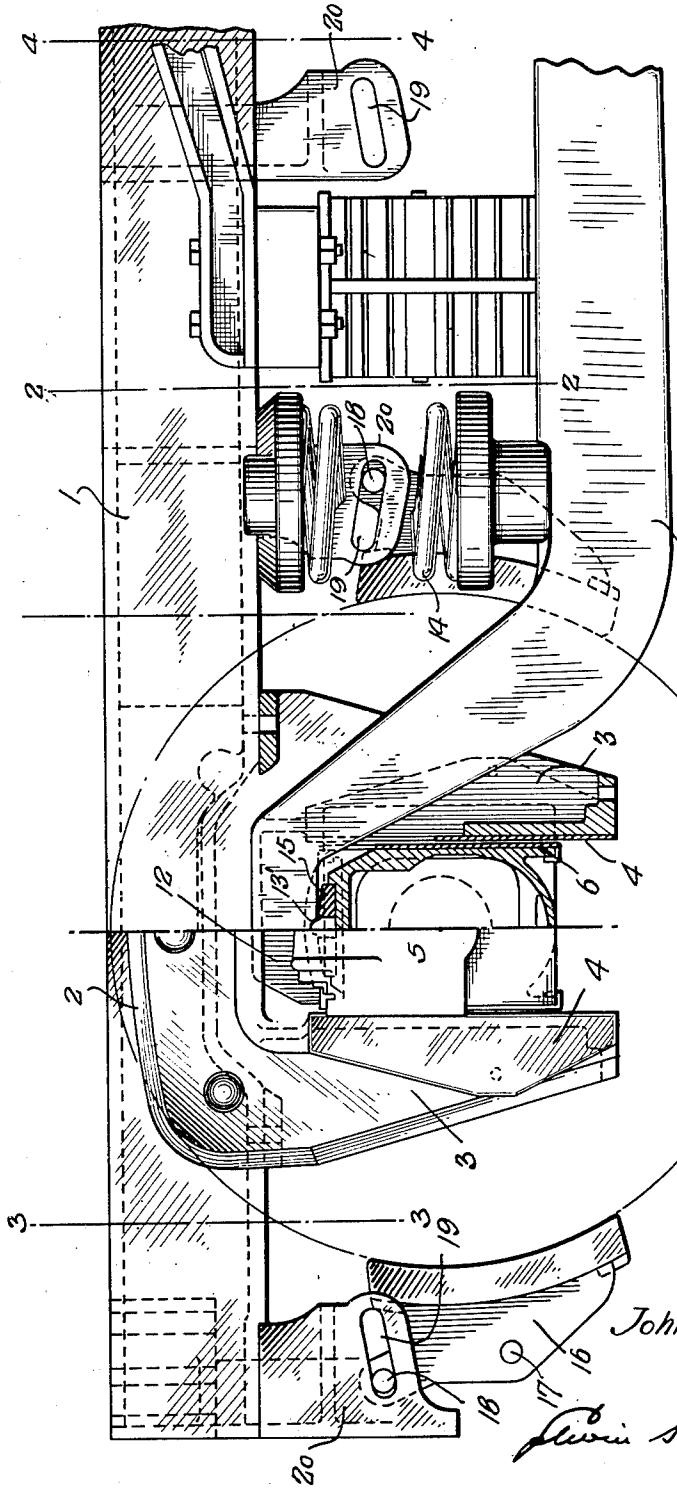

Fig. 1

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Fig. 2

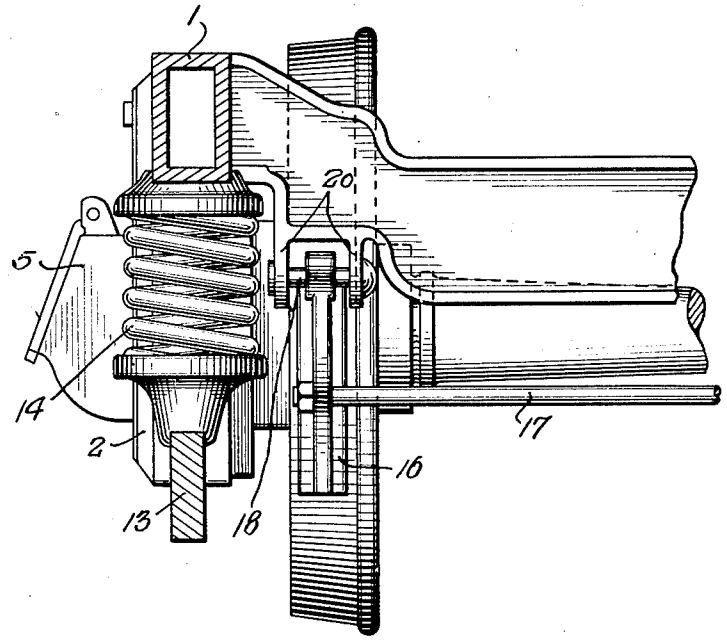

Fig. 3.

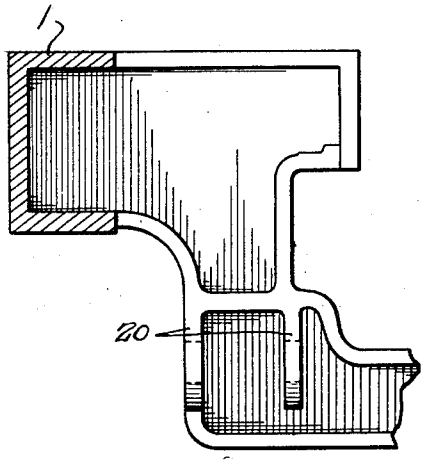

Fig. 4.

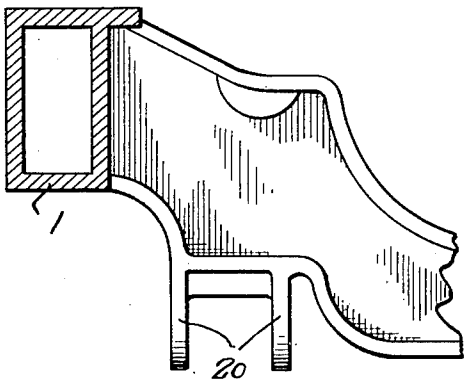

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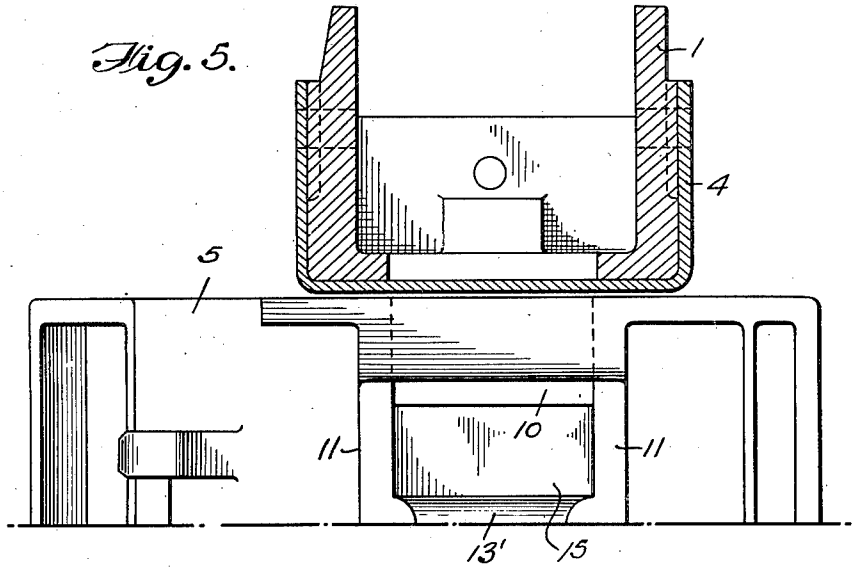
Fig. 5.



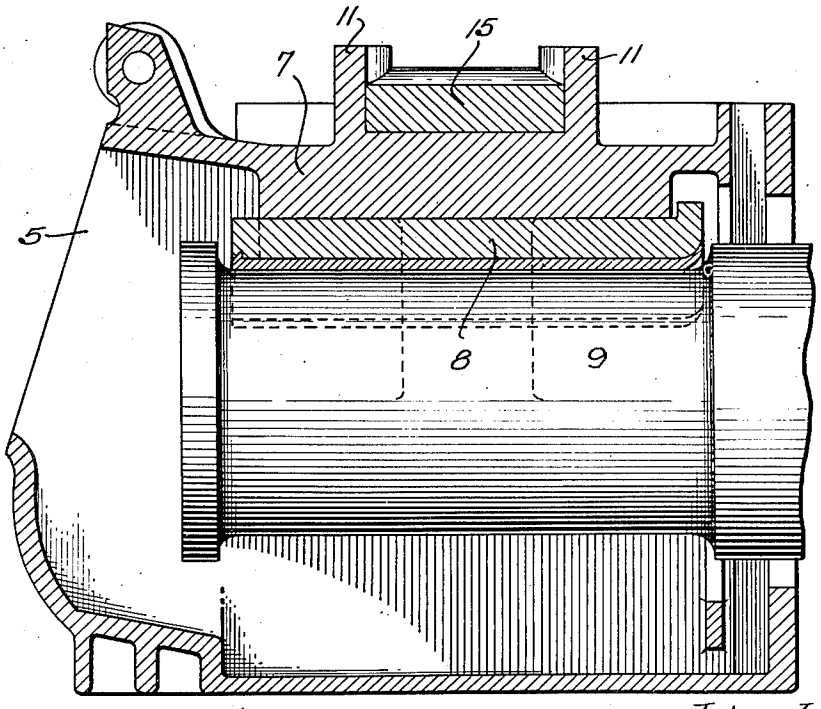


Fig. 6.

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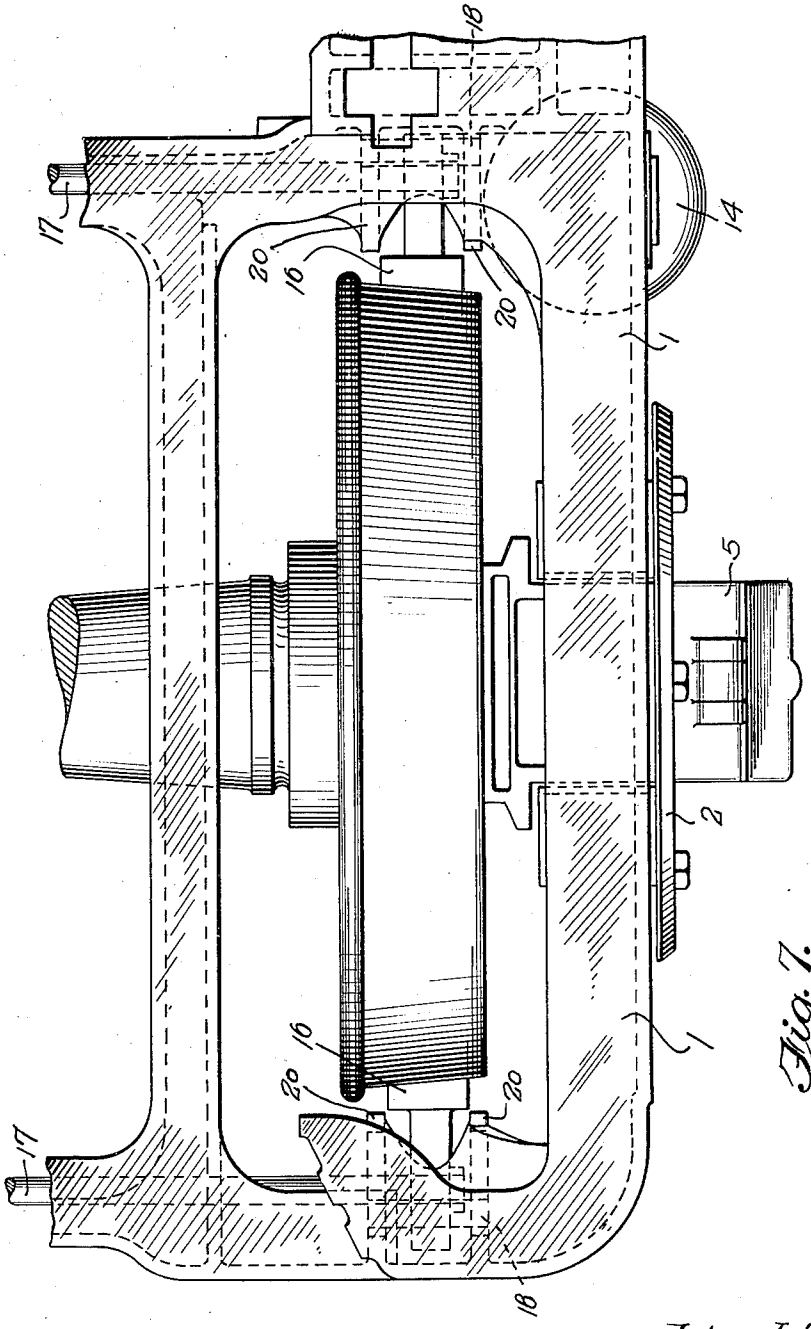

Fig. 7.

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1,979,235

UNITED STATES PATENT OFFICE

1,979,235

CAR TRUCK

John J. Tatum, Baltimore, Md.

Application December 15, 1931, Serial No. 581,253

5 Claims. (Cl. 105—218)

This application is a continuation in part of my prior application for patent filed November 4, 1930, Serial No. 493,426, and applies also to subject-matter disclosed in my application for patent filed June 16, 1928, Serial No. 285,899.

This invention relates to articulated, oscillating, lateral motion car trucks, and particularly to improvements in the construction of the parts of the brake mechanism and running gear mounted on the truck, whereby flange and rail wear and their frictional resistance to train travel is reduced, and easier and more reliable application and release of the brake shoes obtained, and free lateral adjustment of the wheels to brake variations permitted while maintaining a correct relationship between the wheels and brake shoes.

Passenger car trucks, as now commonly constructed, are provided with positively guided journal boxes, each journal box being mounted in a pedestal so as to be guided in position and in its movements by flanges on its sides engaging the pedestal legs, as a result of which the journal box is not free to adjust itself to irregularities in the position of the pedestal and to irregularities in the journal at the same time; as, for instance, if the pedestal flares outwardly or inwardly from a plumb or vertical line the box is required by the guides bearing on the legs of the pedestal to position itself on the journal whichever way the pedestal happens to be attached to the truck. This often throws the load carried by the truck on the back end of the journal bearing in the box, or on the front end, resulting in a small bearing area of the journal bearing being overloaded to such an extent that binding between the journal bearing and the journal occurs and oil is prevented from flowing between the bearing and journal for the lubrication of the bearing surfaces Accordingly, what is known as a hot journal occurs, whereby the journal is damaged or burnt off. Furthermore, the guides on the sides of the journal box rub hard against the pedestal legs and prevent free movement of the box between the pedestal legs brought about by the action of the cushioning springs, resulting in hard or rough riding cars. In passenger cars of usual construction there is a further objection, in that the brake beams are mounted upon hangers carried by the truck frame, which mode of mounting does not allow adjustment of the brake shoes to accommodate themselves to changes of position of the wheels, particularly as regards curvatures in the rails, and the hanger suspension often interferes with a proper release of the brake shoes. Hence there is an objectionable amount of wheel flange and track friction and resistance to travel caused because of the inability, due to such friction and resistance, of the brake shoes to adjust themselves to the movements of the wheels in such manner as to relieve such friction and resistance.

One object of my present invention is to provide means for mounting the brake heads in such manner as to permit them to move laterally, with and during any lateral movements of the wheels, and under pressure of the wheel flanges, whereby to always maintain a proper relationship between the brake heads and wheels and prevent any resistance of the brake heads to the lateral movements of the wheels in accommodating themselves to track variations.

A further object of the invention is to provide for the mounting of the brake heads on an articulated, oscillating, lateral motion car truck so that the brake heads will automatically adjust themselves to a proper working position with relation to the wheels in the various adjusting movements of the latter.

The present application shows my improved brake head supports as employed in conjunction with a floating journal box construction in which the journal box is limited in its lateral movements and held from lateral displacement by interlocking connection with cushioned equalizer bearers, as shown in my said application Serial No. 493,426, although it is to be understood that the improved brake head supports may be employed in conjunction with a floating journal box of the type disclosed in my said application Serial No. 285,899, in which the journal box is allowed to have a certain amount of lateral movement but is held from lateral displacement by suitable stop surfaces on the journal box and truck side frames.

The invention consists of the features of construction, combination and arrangement of parts, hereinafter fully described and claimed, reference being had to the accompanying drawings, in which:—

Fig. 1 is a side elevation, partly in section, of a portion of a truck frame showing a journal box and brake structure embodying my invention.

Figs. 2, 3 and 4 are vertical transverse sections taken on lines 2—2, 3—3 and 4—4 of Fig. 1.

Fig. 5 is a sectional plan view of parts shown in Fig. 1.

Fig. 6 is a vertical longitudinal section through the journal box shown in Figs. 1 and 5.

Fig. 7 is a top plan view of a part of the car truck.

In the illustrated embodiment of the invention,

1 is a side frame member of the truck frame of a railway passenger car provided with the pedestals 2 having the jaws or legs 3 which may be provided on their inner faces with wear plates 4. In the pedestal 2 between the legs 3 is arranged a floating journal box 5. This journal box is devoid of the usual guide flanges or other guiding connections at its sides with the pedestal legs, being of a width somewhat less than the distance between the wear plates 4 of the legs and fitted to slide with freedom between the legs, so that it may accommodate itself to irregularities in the position of the pedestal and to irregularities in the journal at one and the same time. If, therefore, the pedestal deviates either inwardly or outwardly from a plumb or vertical line, or is warped or twisted, this condition of the pedestal will not affect the movements of the journal box, which may position itself either vertically or inwardly or outwardly (laterally) with relation to the pedestal and longitudinally on the journal as may be required, dependent upon the position the pedestal may happen to have upon the truck. The spacing between the sides of the journal box and the pedestal legs is also such as to allow the journal box and axle to have radial or pivotal movement to a certain degree longitudinally of the car. By mounting the journal box so that it is free from guiding engagement with the pedestal, the journal box is prevented from being forcibly shifted to throw the load carried by the truck either on the back end of the journal bearing or on the front end of the journal bearing, and constricting or preventing the flow of oil between the journal bearing and the journal with the result of causing what is known as a hot journal, resulting in the damaging or burning off of the journal. Furthermore, by doing away with the use of positive guiding connections between the journal box and pedestal, which rub hard against the pedestal legs and prevent free movement of the box between the pedestal legs incident to the action of the cushioning springs and to positioning movements of the wheels on the track rails, wear and tear upon the journal box and pedestal and upon the wheel flanges and track rails will be prevented and hard or rough riding of the car and track and rail and other binding and constricting actions resisting free travel will be effectually obviated. As a result, an easy riding truck or car is obtained, wear and tear and frequent replacement and repairs reduced, and the journal box allowed to float and to thereby have free and unimpeded movements for easier riding actions regardless of any irregularities in the form or condition of the pedestal or of the journal being slightly tapered or otherwise irregular. The sides of the journal box may be provided with wear plates 6' to reduce wear and tear thereon and to provide easy contact between the journal box and the wear plates 6, and if desired, a stop flange 6^a may be provided on either side of the box at the rear for engagement with the pedestal to limit the outward movement of the box, when being jacked up to remove and replace journal bearings or journal bearing wedges.

The journal box 5 may be of the type shown in Figs. 2 and 3 in which the box is provided at its top with a fixed or integral wedge seat 7 for the journal bearing 8, disposed between the same and the journal 9, with which seat or wedge and the journal it may have an interlocking connection to assist in holding the box from inward or outward displacement on the journal and relative to the pedestal and journal. The box is provided externally at its top with side flanges 10 and front and rear flanges 11, arranged in parallel pairs and to form a pocket or socket for interlocking connection with a depending or depressed part of the end 12 of the equalizer bearer 13. This end of the bearer seats on a rib 13' along the top of the bearing block 15 between the flanges 11, thereby forming an interlock between the journal box and the bearer, which allows the journal box to have free and easy upward and downward floating movements, while preventing either inward or outward displacement of the journal box. Thus by the use of this interlocking connection between the equalizer bearer, sustaining the pressure of the cushioning springs 14, and the journal box and the interlocking connection between the journal bearing 8 and the seat or wedge 7 and the journal 9, the journal box is held from displacement while permitted to have automatic adjusting and floating movements, thus securing a highly efficient cushioning action for easy riding and adjustment of the journal boxes with the journals, without binding restriction, to permit the wheels to accommodate themselves to curves and irregularities in the track rails, and frictional wear and tear is reduced to the minimum, giving longer life to the journal boxes and pedestals and obviating the expensive frequent repairs and replacements now necessary incidental to the use of pedestals and journal box mountings of ordinary construction. The pocket or socket formed by the flanges 10 and 11 may also serve to receive a cushioning damper of rubber or other elastic material engaged by the end of the bearer 13 and providing a cushioning action for the movement of the bearer, while preventing objectionable grinding noise and wear and tear due to direct contact of metal upon metal.

The journal box construction disclosed in Figs. 2 and 3 adapts the seat or wedge for the journal bearing to be cast with the roof of the box, thereby eliminating what is commonly known as the journal bearing key, commonly made use of to hold the journal bearing in place and which, as ordinarily constructed, is provided with a radial top to allow adjustment for the journal bearing on the journal, which becomes inoperative because of the wear on the back of the wedge and inside of the top of the journal box and also because of the radius on top of the journal box wedge wearing flat. My construction of the journal box avoids the extra cost of the wedge and eliminates entirely the wear and tear on top and on the inside of the roof of the box when the wedge is used as a separate piece.

The described construction of truck design including the floating journal box, arranged and mounted as set forth, does away with the use of a multiplicity of parts, equal in number to about two hundred pieces per car, avoiding the purchase cost of such items, the inspection requirements, and the maintenance cost, and producing a truck containing less parts subject to damage or breakage and giving easier and quieter riding of the trucks under the car, and doing away largely also with the hazards incident to the use of trucks of ordinary construction containing so many parts liable to cause derailments and other accidents.

In order to secure proper positioning of the brake heads with relationship to the wheels, and adapt them to accommodate themselves to lateral and other adjustments of the wheels without re-

striction from the brake gearing, I mount the coating brake head 16 at opposite sides of the truck frame so as to be freely adjustable with their carrier beams 17 toward the peripheries of the wheels and also laterally of and with the wheels. To this end the brake heads 16 are mounted at their upper ends on pivot bolts or members 18 passing through ears on the heads and engaging inclined slots 19 in the fork plates 20 of forked hangers carried by the truck frame, whereby the coupled brake heads, brake beams and shoes are mounted to slide toward and from the wheels in a path inclined to the horizontal, as well as to have pivotal movements to adjust themselves to the wheels in a braking action. The arrangement is such that after application, and upon release of the brake mechanism, the brakes will automatically by their weight or by the action of gravity move away from the wheels due to the outward and downward inclination of the slots 19. By this means the brake heads are mounted for free and automatic adjustments to suit varying conditions of the brake rigging and wheels in the brake applying and releasing actions, and to recede positively on a brake releasing action so as to prevent the undue wear and tear caused ordinarily by continuance of engagement of the brake shoes with the wheels after a brake releasing action. This construction also obviates the use of the ordinary brake hangers, pins and keys and the well known objections incident thereto, such as their tendency to cant and bind so as to inhibit simultaneous free movements of the parts in different planes of the character referred to. As shown in Figs. 2, 3 and 4 the ears of the brake beams also slidably engage the pins or bolts 18 so as to be movable between the fork arms 20 laterally of the truck or car, under pressure of the wheel flanges in the lateral shifting movements of the wheels to accommodate themselves to curves or other track variations, so that such adjustments of the wheels can occur without interference therewith by the brake shoes. By thus mounting the brake heads to move laterally with the wheels, the wheels may freely adjust themselves to track variations, to obtain what I call "free-wheeling", thus preventing wheel and track flange wear and resistance to travel of the train.

It will be observed that my invention provides a truck so constructed that the framework of the truck may move in one direction laterally while the journal box and wheels are moving in the opposite direction laterally, and in which the framework of the truck may move laterally in one direction while the brake beam attached to the framework will follow the wheel and move laterally in the opposite direction.

Also it will be seen that my invention provides a truck in which the truck framework may move laterally with the car body in one direction while the wheels and the journal box are moving laterally in the opposite direction at the same time, and that this construction will allow one pair of wheels and the associated journal boxes, as well as the associated brake beam, to move laterally in one direction, while the other wheels, journal boxes and brake beams of the same truck may move laterally in the opposite direction. My improved construction also adapts the truck frame to freely move laterally in one direction while the truck bolster is free to move laterally in the opposite direction with the brake beam, car wheels and journal box.

It will also be seen that my invention provides a brake mechanism for articulated, oscillating, lateral motion car trucks in which free lateral and radial movements of the aforesaid parts are permitted, independently or conjointly.

As a result of these functions, numerous advantages are obtained as follows:

1. When the car is rounding a curve, the truck frame, with the body, may move laterally in one direction on the curve, while the wheels, journal boxes and brake beams may move simultantously in the opposite direction, thereby relieving the strain on the rails over which the wheels are rolling, the strain of the wheel flanges against the rails and the strain of the brake shoes against the flanges of the wheels, reducing to a minimum train resistance and reduction in the load for the locomotive to pull.

2. By the free lateral and radial movements of the parts independently or conjointly, undue wear and tear on the rails and wheel flanges is prevented, wheels prevented from jumping the rails, and when cars are moving over rails that are not perfect in alinement, the wheels, journal boxes and brake beams will move laterally with the irregular alinement of the rails independent of the truck frame and the car body ensuring against irregular lateral movement of the car body when the car is moving over irregular tracks.

From the foregoing description, taken in connection with the accompanying drawings, the construction, mode of operation and advantages of my invention will be readily understood without a further and extended description, and such construction and advantages appreciated by those versed in the art. While the structure disclosed is preferred, it will, of course, be understood that changes in the form, construction and arrangement and proportion of parts may be made, within the scope of the appended claims, without departing from the spirit or sacrificing any of the advantages of the invention.

What I claim is:

1. In a running gear and brake mechanism for railway cars, a truck frame, an axle, journal boxes in which the ends of the axle are journaled, said boxes being loosely mounted for floating motion in the truck side frames in such manner as to adapt the axles and boxes and the side frames to have relative vertical, lateral and radial movements, and brake heads mounted directly on the truck and supported thereon for applying and releasing actions and for relative movements vertically, laterally and radially of the truck with the wheels.

2. In a railway car truck in which the wheel axles are mounted in journal boxes on the truck side frames for relative vertical, lateral and radial movements between said boxes and the side frames, hangers directly mounted on the truck having fork arms provided with slots inclined to the horizontal, pivot pins slidably engaging said slots, and brake heads supported by the pivot pins for pivotal movements in said slots and sliding movements therein toward and from the wheels, said heads being also slidably mounted on said pins for movement laterally of the frame, whereby the brake heads are mounted to move conjointly with the wheels relatively to the frame laterally and radially as specified.

3. Brake mechanism for articulated, oscillating, lateral motion car trucks comprising a truck frame and wheels, movable vertically, laterally and radially with relation to each other, brake

heads directly supported by the truck frame with freedom of motion toward and from the wheels and laterally of the truck frame, and means connecting the heads at opposite sides of the frame to move conjointly with the wheels relatively to the frame laterally and radially as specified.

4. Brake mechanism for articulated, oscillating, lateral motion car trucks comprising a truck frame and wheels journaled therein, movable vertically, laterally and radially with relation to each other, brake heads directly supported by the truck frame for sliding movements toward and from the wheels, laterally with relation to the wheels, laterally and radially with the wheels relatively to the frame, and automatic retraction by gravity when braking stress is removed therefrom, and means connecting the brake heads at opposite sides of the frame to move conjointly with the wheels relatively to the frame laterally and radially as specified.

5. Brake mechanism for articulated, oscillating, lateral motion brakes comprising a truck frame and wheels journaled therein, movable vertically, laterally and radially with relation to each other, break heads pivotally and slidably mounted directly on the truck frame for sliding and pivotal movements toward and from the wheels, lateral sliding motion relative to the wheels, laterally and radially with the wheels relatively to the frame, and automatic retraction by gravity on removal of braking stress therefrom, and a brake beam connecting the brake heads at opposite sides of the frame to move conjointly with the wheels relatively to the frame laterally and radially as specified.

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