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VARIABLE HEIGHT CENTRAL BEARING

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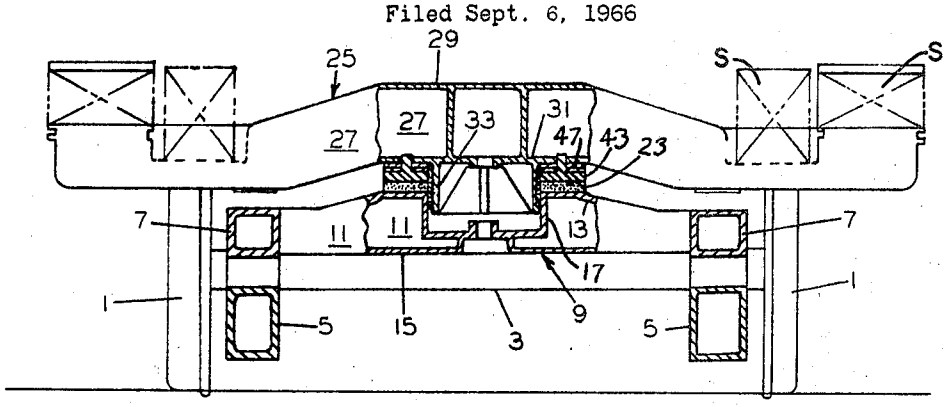

FIG-1

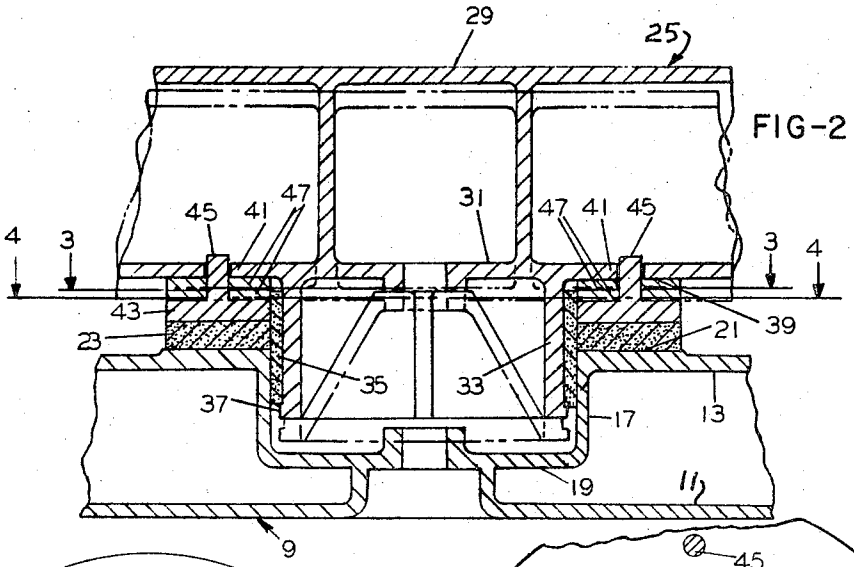

FIG-2

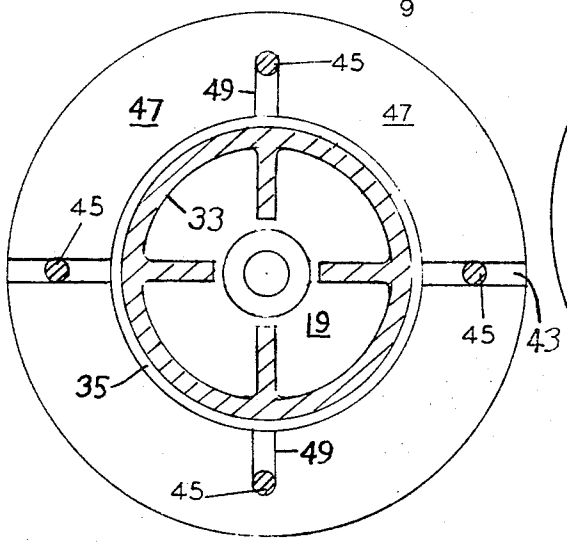

FIG-3

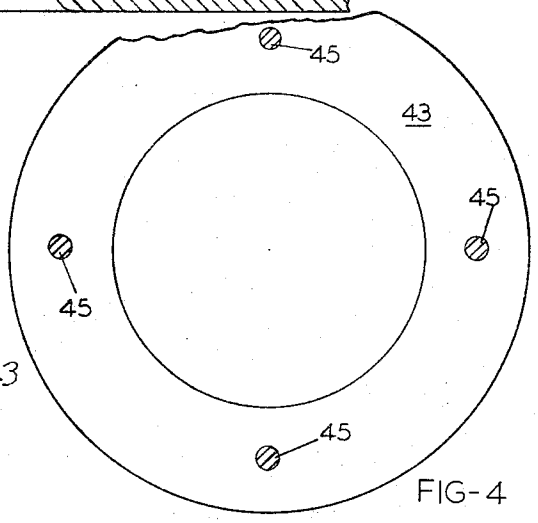

FIG-4

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VARIABLE HEIGHT CENTRAL BEARING

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The invention relates to railway rolling stock and consists particularly in an improved central bearing for pivotally supporting a railway vehicle body on a truck.

After continued use, the diameter of car wheel treads is substantially reduced by wear and thus results in a proportional lowering of the car body. This is particularly serious on cars used in train service where coupler height must be maintained substantially constant and uniform to permit coupling of cars in the trains, and on many commuter and rapid transit lines where station platforms and normal car floor heights are substantially coplanar with each other to permit rapid loading and unloading of cars. Wheel wear can be corrected for by shimming the springs by which sprung structure is supported from unsprung structure, but this procedure is complicated by the fact that the springs at each side must be equally shimmed, and in trucks provided with air springs controlled by leveling valves shimming of the springs may require adjustment of the valves and their control linkages. As a matter of practice it has been found that the most effective and simple way to correct for wheel wear is to shim the center plate or central bearing by which the car body is pivotally supported on truck structure. With present methods of applying shims to central bearings of the type disclosed in J. C. Travilla Patent 2,655,117, of which applicants' assignee is the owner by assignment, the top member of the bearing must be completely separated from the bottom member to permit the insertion of annular shims around the cylindrical depending central portion of the top member, and because the shims must be prevented from rotating relative to each other and to the bottom horizontal surface of the top member, they must be welded or otherwise secured to the bottom surface of the top member. Otherwise rotation will take place between them instead of between metal surfaces and the friction material liner interposed between the top and bottom horizontal members, thus nullifying the shimmy resisting effect of the friction member.

It is an object of the present invention to provide improved means for shimming central bearings without necessitating full separation of the supporting and supported parts.

It is a further object to provide means for shimming central bearings of the type referred to above including means rendering unnecessary securement of the shims to one of the central bearing members to prevent their rotation.

The foregoing and additional more detailed objects and advantages of the invention will be evident from the following description and the accompanying drawings, in which:

FIG. 1 is a transverse vertical sectional view of a railway vehicle truck embodying the invention.

FIG. 2 is an enlarged fragmentary view of the central portion of the truck structure shown in FIG. 1, showing the central bearing.

FIG. 3 is a horizontal sectional view along line 3—3 of FIG. 2.

FIG. 4 is a horizontal sectional view of the central bearing annular plate, along line 4—4 of FIG. 2

The truck shown in FIG. 1 includes wheels 1, an axle 3, side frames 5 supported from axle 3 laterally inwardly of wheels 1, and a frame comprising longitudinally extending box section side members 7 supported on side

frames 5 and connected to each other by a transverse transom structure 9. Transom 9 is of box section having spaced apart side walls 11, 11, substantially horizontal top walls 13, and bottom wall 15. At its center wall 13 is formed with a depression defined by vertical cylindrical wall 17 and a horizontal bottom wall 19. Radially outwardly of depression 17, 19 the upper wall 13 is formed with an upwardly facing annular surface 21 on which is seated a corresponding annular pad 23 of brake lining material having a high coefficient of friction.

A transverse bolster 25, also of box section, i.e., having spaced side walls 27, 27, substantially horizontal top wall 29 and bottom wall 31, mounts spring groups S, S at its ends for supporting a car body. Bottom wall 31 is formed with a downwardly projecting vertical cylindrical wall 33, of slightly less diameter than truck frame transom cylindrical wall 17, for mating receipt therein, the annular space therebetween being occupied by an annular frictional sleeve 35, the latter being maintained at proper height on wall 33 by an annular shoulder 37 along the lower margin of the latter. Surrounding cylindrical wall 33 the bottom surface 39 of bolster bottom wall 31 is flat, and is formed with a plurality of equiangularly spaced holes 41, preferably spaced 90° apart and positioned on the transverse and longitudinal center lines respectively of the truck and the bolster. Between bottom surface 39 of the bolster and friction pad 23 is positioned an annular metal plate 43 in contact with the top surface of pad 23. Plate 43 mounts a plurality of upstanding pins 45 adapted to register with and extend through holes 41 in the bolster bottom wall and thus maintain plate 43 against rotation relative thereto, the bolster bottom wall being adapted to rest directly on the upper surface of plate 43 as shown in broken lines on FIG. 2. With this arrangement, vertical load is transmitted directly from bottom wall 31 through plate 43 and friction pad 23 to top wall 13 of the truck frame transom, the frictional resistance between friction pad 23 and truck transom top surface 21 and the bottom surface of plate 43 opposing tendencies of the truck to oscillate about its vertical axis relative to the bolster. The interaction of pins 45 and holes 41 in the bolster bottom wall prevent any relative rotation of plate 43 with respect to the bottom surface of bolster bottom wall whereby relative rotation of the bolster and truck portions of the bearing would be freely accommodated by the metal-to-metal engagement of the top wall plate 43 and the bottom wall of the bolster instead of the higher frictional contact between bottom surface of plate 43 and the top surface of friction pad 23.

In order to raise the bolster with respect to the truck frame so as to compensate for wheel wear, yet make it unnecessary to separate the bolster and truck frame completely at the central bearing, semiannular shims 47 are provided. Shims 47 are in the form of arcs slightly less than 180° so that they can be inserted from either side, the space between them providing clearance for a pair of diametrically opposite pins 45 on plate 43. At their midpoints shims 47 are formed with radial slots extending outwardly from their inner margins a sufficient distance to clear the other pair of pins 45 on plate 43.

Operation of the device is as follows: When excessive wheel wear is noted, the bolster may be jacked to a height sufficient to provide the proper car floor and coupler height from the broken line position shown in FIG. 2, then the bolster is seated directly on plate 43. When the bolster is thus elevated, plate 43 remains by gravity seated on friction pad 23 and thus spaced vertically from the bottom surface 39 of bolster bottom wall 31. As many shims 47 as may be needed to elevate the bolster, and with it the car body to the desired height may then be inserted without separating the vertical cylindrical

wall surfaces **33** and **17**. After insertion of the desired shims **47** the jack may be let down to lower bolster **25** and with it bottom wall **31** onto the surface of the shims. Since pins **45** are of sufficient length to accommodate any anticipated number of shims, plate **43** will be maintained against rotation irrespective of the number of shims inserted within this anticipated limit, and undesired rotation of the bolster relative to truck frame transom **9** will be opposed by the frictional resistance between the bottom surface of plate **43** and friction pad **23**, and between the latter and top surface **21** of transom **9**.

Details of the central bearing may be modified substantially without departing from the spirit of the invention and exclusive use of such modifications as come within the scope of the appended claims is contemplated.

What is claimed is:

1. In a central bearing for railway vehicles, a top member, a bottom member, one of said members being formed with a cylindrical wall recess and the other of said members being formed with a cylindrical wall projection pivotally received in said recess, opposing horizontal surfaces on said members surrounding said projection and recess therein, an annular plate surrounding said recess and projection, and means retaining said plate against rotation relative to one of said members while accommodating substantial vertical movement between said plate and said one member whereby to permit the insertion therebetween of shims as desired.

2. A central bearing according to claim **1** wherein said last named means comprises registering openings in the

surface of one of said members of said same member and cylindrical projections on said plate in registry with said holes, said projections extending parallel to the axis of said cylindrical walls.

3. A central bearing according to claim **2** wherein there is a plurality of said cylindrical elements in registering holes.

4. A central bearing according to claim **3** including shims of annular sector shape of sufficient size to be disposed between adjacent pairs of cylindrical members.

5. A central bearing according to claim **4** wherein there are additional pins between said named pins and said shims are radially slotted to clear said additional pins.

6. A central bearing according to claim **5** wherein said first named pins are diametrically opposed to each other and said last named pins are on a diameter at right angles to the first diameter, said shims being substantially semiannular sectors.

7. A central bearing according to claim **1** in which there is a flat annular pad of friction material disposed between said annular plate and said other member.

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