June 21, 1949. W. H. MEYER 2,474,008

RAILWAY TRUCK PEDESTAL LINER

Filed Aug. 11, 1944 3 Sheets-Sheet 1

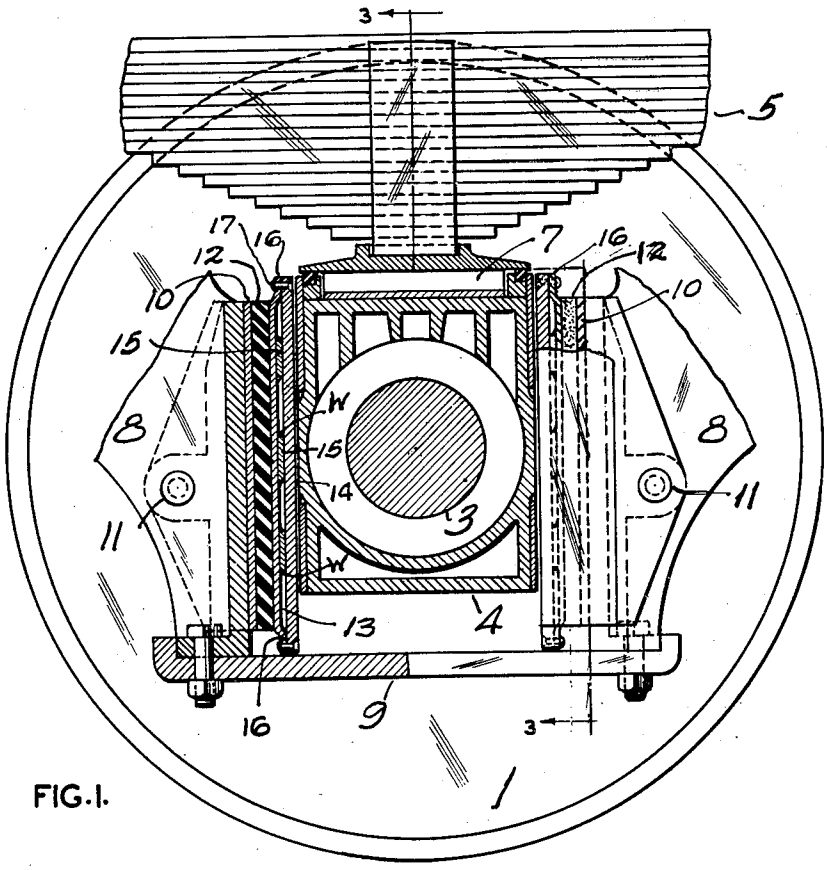

FIG. 1.

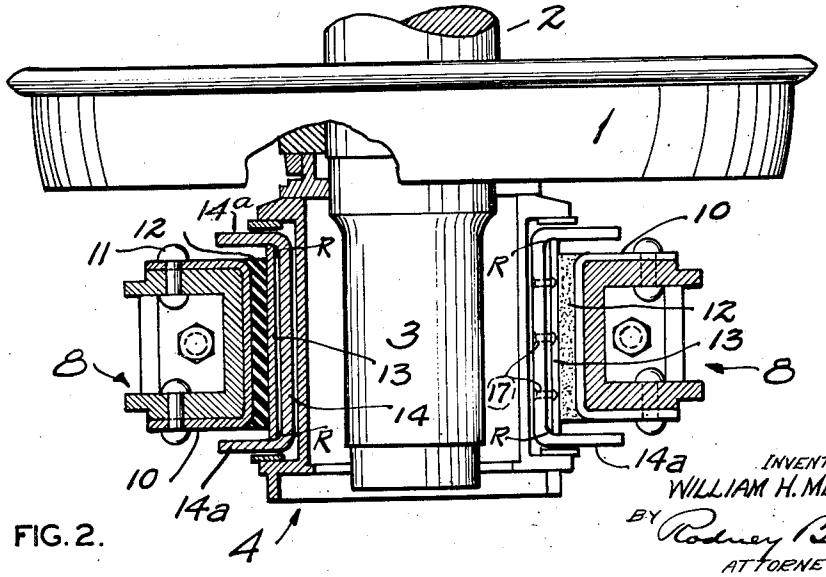

FIG. 2.

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RAILWAY TRUCK PEDESTAL LINER

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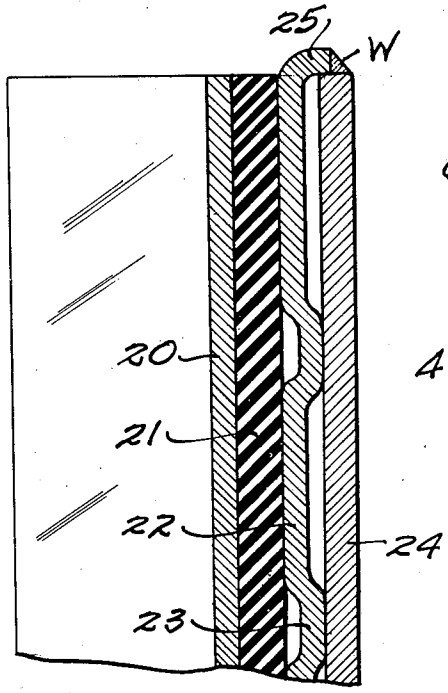

FIG. 4.

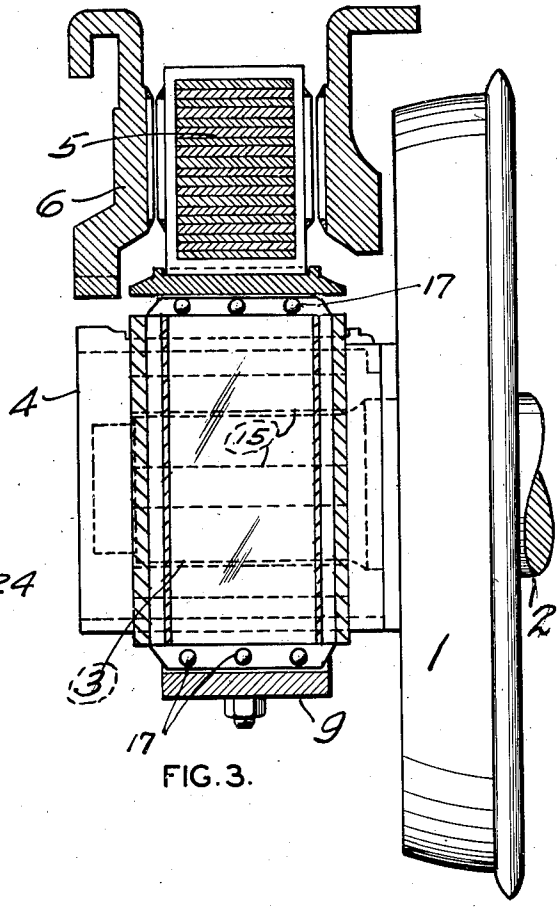

FIG. 3.

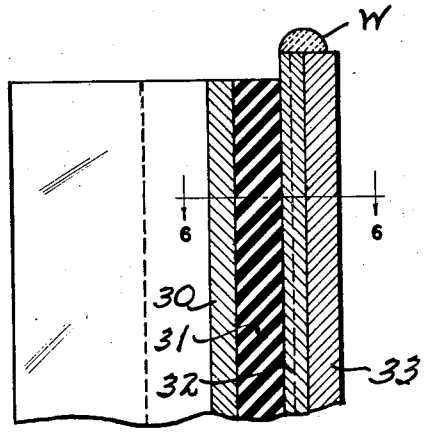

FIG. 5.

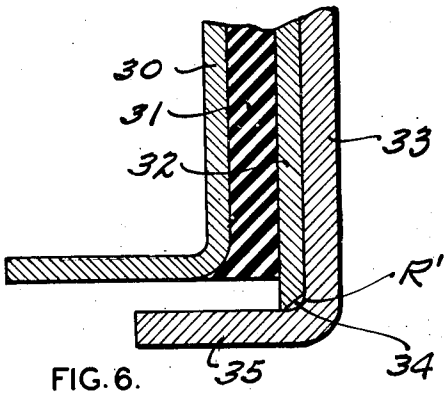

FIG. 6.

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RAILWAY TRUCK PEDESTAL LINER

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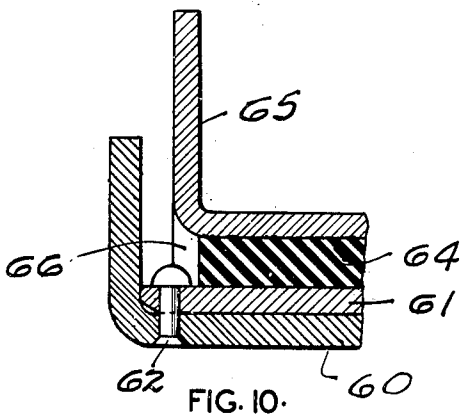

FIG. 10.

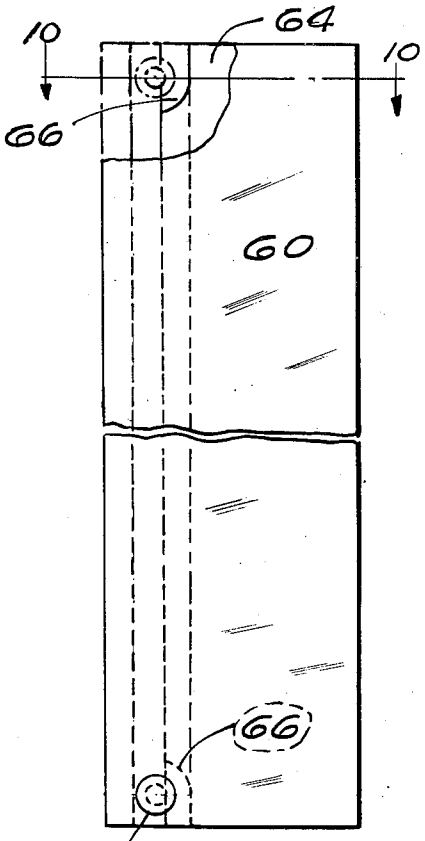

FIG. 9.

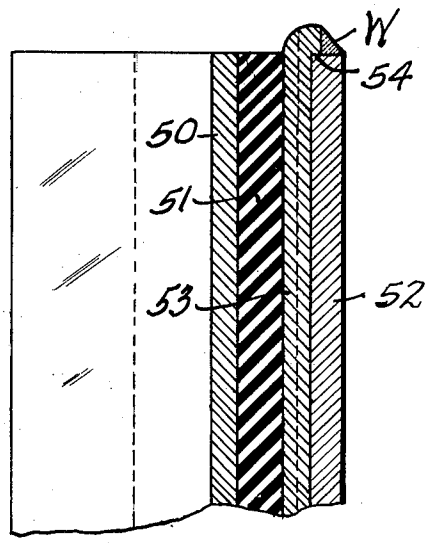

FIG. 8.

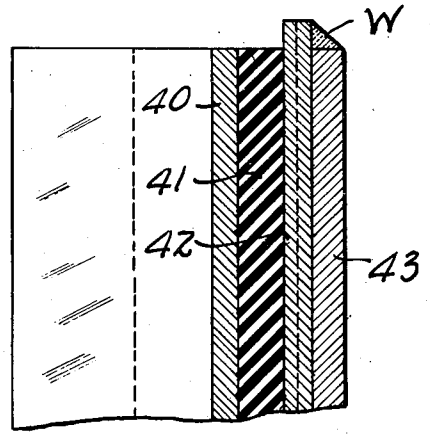

FIG. 7.

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2,474,008

RAILWAY TRUCK PEDESTAL LINER

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Application August 11, 1944, Serial No. 549,022

15 Claims. (Cl. 105—225)

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The invention relates to railway rolling stock, and more particularly to a pedestal liner device which is adapted to be interposed between relatively moving parts of a railway truck or of a railway vehicle body structure, such as a frame pedestal leg and a journal box, and which is subject to wear resulting from the relative movement of the parts, thereby preventing wear of the part to which it is attached.

The invention relates further to a device of this type which comprises a pad of rubber having metal plates bonded to its opposite faces in order that it may function to provide a limited amount of relative movement of the vehicle parts through the resistance of the rubber in shear in certain directions, to resist thrust under compression of the rubber in another direction, and to permit free sliding action between the moving parts in still another direction. Examples of devices of this general type are shown in J. C. Travilla Patents 2,229,429, issued January 21, 1941, and 2,299,569, issued October 20, 1942, and may be used on railway vehicle trucks or on the body framing of the vehicle such as for instance a tender underframe with pedestals of the type disclosed in Travilla et al. Patent 2,274,757, issued March 3, 1942.

Such devices are used under conditions where one of the plates slidably engages one of the relatively movable parts and is subject to wear to the extent that renewals of the plate are necessary if the truck is to operate safely and satisfactorily and without an undesirable increase in the clearance between the associated parts. In present arrangements, it has been necessary to replace the complete device because it has not been feasible to separate the worn plate from the rubber pad for economical renewal of the worn plate only.

Such devices may also be used under conditions in which the rubber pad may lose its resilient characteristics or its useful life before the plate which slidably engages the truck part has become worn to the extent that the plate must be renewed, and it has not been feasible to separate the parts of the device for economical renewal of the rubber element only.

The main object of the present invention is to provide a device of this type which is so arranged that an economical renewal of worn or defective parts only can be made and to thereby increase the useful life of at least a substantial portion of the device. This is accomplished by providing an arrangement whereby the plate, which is subject to wear and which is usually

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made of high grade steel and hardened, may be readily removed from the remainder of the device so that either it or the rubber unit only may be renewed when necessary.

It is a further object to arrange for the attachment of the removable wear plate to one of the plates which is bonded to the rubber pad without injury to the pad on account of the securing means used, and further to arrange for the ready removal of the wear plate without injury to the rubber pad and the plates which are bonded to the rubber pad.

It is a further object to avoid undue increase in the size of the device because of the inclusion of removable wear elements and of attaching means for the same.

These and other detail objects as will appear from the following description are attained by the structures illustrated in the accompanying drawings, in which—

Figure 1 is a side view of a railway wheel with a journal box carried thereby and received between the legs of the pedestal of a frame which is spring-supported upon the box so that the pedestal and box move relative to each other, there being a liner device embodying the invention between the journal box and the pedestal legs.

Figure 2 is a top view and horizontal section illustrating the structure shown in Figure 1.

Figure 3 is a vertical transverse section taken on the line 3—3 of Figure 1, the pedestal leg being removed.

Figures 4, 5, 7 and 8 are detailed vertical sections illustrating modified forms of liners and corresponding to the upper portion of the sectioned liner part of Figure 1.

Figure 6 is a detailed horizontal section taken on the line 6—6 of Figure 5.

Figure 9 is a side view, with a part broken away, illustrating another form of the invention.

Figure 10 is a detailed horizontal section taken on the line 10—10 of Figure 9.

In Figures 1–3, a truck wheel 1 is shown mounted upon an axle 2, which includes a journal 3 mounting a journal box 4 on which is supported a leaf spring 5, which yieldingly supports a frame 6. The mounting of the leaf spring on the journal box may include rollers 7 whereby the spring and frame may move relative to the box longitudinally of the axle, as well as relative vertical movement of frame and box. The frame includes a pedestal having spaced legs 8 between which the box is received, the lower portions of the legs being connected with the usual tie bar 9.

Each pedestal leg is provided with a liner including an inner plate 10 U-shaped in cross section so as to fit around the pedestal leg to which it may be secured by rivets 11. A flat slab-like pad 12 of rubber or similar material has one face vulcanized or otherwise bonded to the portion of plate 10 which faces towards the journal box and an outer plate 13 is vulcanized or otherwise bonded to the other face of pad 12. A wear plate 14 is interposed between plate 13 and the side wall of the journal box and preferably plates 13 and 14 are held in spaced relation by a plurality of relatively narrow fillers or spacers 15 which may be welded to plate 13 as indicated at W, or may be similarly welded to plate 14, before the device is assembled.

Plates 13 and 14 extend beyond the upper and lower ends of pad 12 and plate 10 and the projecting end portions of plate 13 are offset towards plate 14 to form flanges 16 bearing against plate 14. Plate 14 is held in assembled relation with plate 13 by rivets 17 fastened through plate 14 and flanges 15, and plate 13 is fitted without endwise play between the flanges 14a of plate 14 to take the side thrusts off the rivets 17.

As is well understood in the art, the journal box and pedestal legs will have substantial relative movement both vertically and laterally when the vehicle is travelling and during the relative moving of these parts the box will be thrust against wear plate 14 which will be subject to wear. In pedestal liners of this general type as used previously, when substantial wear occurred it has been the practice to replace the entire liner unit even though the rubber pad and the inner plate were still in good condition because either the rubber would be rendered useless if removed from the steel plates to which it is bonded or there would be no economy in removing the rubber from the liner plates and applying a new outer plate, which process would involve shipping the device to the rubber factory for reconstruction. With the arrangement described above, the wear plate 14 can be removed from the device in any railway repair shop either while the device is on the pedestal or after the device is removed from the pedestal, and a new wear plate applied. The removal of rivets 17 and the driving of corresponding rivets through flanges 16 and the new wear plate may be effected without injury to any portion of the rubber pad since these rivets and the portions of the plates through which they are driven are spaced from the pad.

In the event that the rubber pad should deteriorate to where it should require renewal before the wear plate, either the original plate or a subsequent plate, is worn excessively, a new rubber unit comprising the inner plate 10, rubber 12, and outer plate 13 may be applied to the old wear plate 14, thus effecting a substantial economy in such renewal, particularly because the plate 14 is made relatively heavy to withstand the thrusts applied and wear and is made of a high grade steel and usually hardened.

The spacing of wear plate 14 from outer plate 13 reduces to some extent the amount of heat of friction transmitted from the wear plate to pad 12 but the main reason for this spacing is to accommodate the lateral extension (see Figure 2) of outer plate 13 into contact with the flanges 14a of the wear plate, irrespective of the radii R at the inner corners of the wear plate. The contact between the side edges of plate 13 and the wear plate flanges 14a is desirable because of the resulting direct transmission between these plates of thrusts applied longitudinally of the axle. If plate 13 were narrower so that the opposing faces of plates 13 and 14 could be in contact with each other, the lateral thrusts would necessarily be transmitted through rivets 17, thus requiring more or heavier rivets or creating the hazard of possibly loosening the rivets.

Figure 4 illustrates another form of the invention in which the inner plate 20 and the rubber pad 21 are substantially the same as plate 10 and pad 12 but outer plate 22 has restricted portions 23 offset away from the pad and forming elements which hold wear plate 24 spaced from the major portion of outer plate 22, offset elements 23 of the outer plate corresponding in function to the separately formed spacing elements 15 of Figures 1–3.

This form of the invention also embodies a modification in the means securing the wear plate to the outer plate if the wear plate is of the same length as the pad and inner plate. The upper and lower portions 25 of the outer plate are projected above the pad and are bent outwardly over the top and bottom edges of the wear plate and the upper and lower edges of plates 22 and 24 are secured together by welds W spaced substantially from pad 21. Hence the latter will not be affected by the heat of the welding operation. The spacing of the outer plate and wear plate accommodates the radii at the inner corners between the outer plate and its bent over portions 25.

Figures 5 and 6 illustrate another form of the invention in which inner plate 30 and rubber pad 31 are the same as previously described but outer plate 32 and wear plate 33 have their opposing faces in contact with each other. The outer plate has its side edges beveled, as indicated at 34, to accommodate the radius R' at the inner corner of the wear plate. Nevertheless, the side edges of the outer plate abut the wear plate flanges 35 so as to directly transmit thrusts applied to these parts longitudinally of the axle.

In this arrangement, the upper and lower portions of both plates 32 and 33 are extended beyond the ends of pad 31 and inner plate 30 and are secured together by welds W applied to the end edges which are spaced substantially from the pad.

Figure 7 illustrates another form of the invention in which inner plate 40, pad 41, outer plate 42 and wear plate 43 are the same as shown in Figures 5 and 6, except that wear plate 43 is of the same length as pad 41 and inner plate 40 and is shorter than plate 42, thus providing pockets between the end edges of wear plate 43, and the outer faces of the end portions of outer plate 42, and the welds W fill these pockets.

Figure 8 shows another form of the invention in which inner plate 50, pad 51 and wear plate 52 are the same as shown in Figure 7 but the end portions of outer plate 53 are bent over the end edges of wear plate 52, thus forming shoulders 54 to resist the vertical thrusts transmitted between these plates. The end edges of plates 52 and 53 form pockets for the welds W.

Figures 9 and 10 show another arrangement in which the wear plate 60 and outer plate 61 have their opposing faces contacting the same as shown in Figures 6, 7 and 8. These plates are held assembled by rivets 62 but, instead of these plates being extended beyond the ends of pad 64 and inner plate 65, the pad is notched out, as indicated at 66, to accommodate the rivet head and riveting tool and also providing for the chiseling off of the rivet head so that the wear plate may be removed from the assembly without injury to the rubber pad.

Each form of the invention attains the general objects set forth in the introductory portion of the specification, and it will be understood that other variations in the details of construction may be made without departing from the spirit of the invention and the exclusive use of those modifications coming within the scope of the claims is contemplated.

What is claimed is:

1. A railway vehicle pedestal liner comprising an inner plate arranged for application to the journal box-opposing face of a pedestal leg, a pad of rubber-like material having one side surface bonded to said plate, an outer plate bonded to the other side surface of said pad and having portions extending beyond the upper and lower ends of said pad, a wear plate mounted on said outer plate, said outer plate and wear plate having elements abutting each other transversely of the general plane of the plates to prevent relative movement therebetween and to transfer thrusts between them applied in directions parallel to said plane, and means securing the wear plate to said portions of the outer plate at points spaced from said pad.

2. A railway vehicle pedestal liner comprising an inner plate arranged for application to the journal box-opposing face of a pedestal leg, a pad of rubber-like material having one side surface bonded to said plate, an outer plate member bonded to the other side surface of said pad, and a wear plate member substantially parallelling said outer plate member, there being means spacing said members apart substantially throughout the length of the pad, one of said members having its ends extending above and below the top and bottom edges of said pad and offset towards the other member, and means for securing the latter-mentioned member to said offset ends.

3. A railway vehicle pedestal liner comprising a pad of rubber-like material, a plate bonded to one side of said pad and arranged for application to a pedestal leg, a plate bonded to the other side of said pad and having portions extending beyond the ends of said pad, and a wear member associated with said latter-mentioned plate and weld-like connections between the end edges of said wear member and the end edges of said portions and spaced from said pad.

4. A railway vehicle pedestal liner comprising an inner plate arranged for application to the journal box-opposing face of a pedestal leg, a pad of rubber-like material having one side surface bonded to said plate, an outer plate member bonded to the other side surface of said pad and extending substantially beyond the edges of the latter, and a wear plate member mounted on said outer plate member, the ends of one of said members being offset towards the ends of the other of said members and said members being secured together through said offset ends at points spaced from said pad.

5. A railway vehicle pedestal liner comprising an inner plate arranged for application to the journal box-opposing face of a pedestal leg, a pad of rubber-like material having one side surface bonded to said plate, an outer plate bonded to the other side surface of said pad and a wear plate substantially parallelling said outer plate, relatively restricted portions of said outer plate being offset away from said pad and holding the wear plate in spaced relation to the major portion of the outer plate, the ends of the outer plate being offset towards the ends of said wear plate and the plates being secured together through said offset ends.

6. A railway vehicle pedestal liner comprising an inner plate arranged for application to the journal box-opposing face of a pedestal leg, a pad of rubber-like material having one side surface bonded to said plate, an outer plate bonded to the other side surface of said pad, and a wear plate mounted on said outer plate, the ends of said outer plate being bent over the end edges of said wear plate and forming pockets therewith, opening away from the pad, there being welds in said pockets securing the outer plate and wear plate together.

7. A railway vehicle pedestal liner comprising an inner plate arranged for application to the journal box-opposing face of a pedestal leg, a pad of rubber-like material having one side surface bonded to said plate, an outer plate bonded to the other side surface of said pad, and a removable wear plate mounted on said outer plate, the corners of said pad being provided with notches, and rivets extending through said wear plate and outer plate with heads received in said notches.

8. A railway vehicle pedestal liner comprising an inner plate arranged for application to the journal box-opposing face of a pedestal leg, a pad of rubber-like material having one side surface bonded to said plate, an outer plate bonded to the other side surface of said pad, and a removable wear plate mounted on said outer plate, the end portions of the outer plate and wear plate being extended above and below the rubber pad and having flush edges, and welding material applied to said edges and spaced from said pad and holding said outer plate and wear plate together.

9. A device for transmitting thrust between a railway vehicle pedestal leg member and an adjacent journal box member comprising an inner plate with flanges extending therefrom in one direction constructed and arranged to be fixed to one of said members, a pad of rubber-like material having one face bonded to the surface of the plate facing in the opposite direction, an outer plate bonded to the other face of said pad, and a separate wear plate mounted on said outer plate and constructed and arranged to slidingly engage the other member and provided with flanges overlapping the first mentioned flanges to form stops to limit relative lateral movement of said members, the flanges of said wear plate engaging the opposed edges of said outer plate for preventing relative movement therebetween and for transmitting lateral thrusts from said wear plate directly to said outer plate and then to said pad and then to said flanged inner plate.

10. A railway vehicle pedestal liner comprising an inner plate arranged for application to the journal box opposing face of a pedestal leg, a pad of rubber-like material having one side surface bonded to said plate, an outer plate bonded to the other side surface of said pad, a removable flanged wear plate mounted on said outer plate whereby the flange portion of the wear plate engages the opposed edges of said outer plate to prevent relative movement therebetween and may overlap a portion of the pedestal leg side to limit relative lateral movement of the journal box and the pedestal leg, and means securing the wear plate to the outer plate.

11. A device as described in claim 10 in which the inner plate is flanged with the flanged portion arranged to engage the side of a pedestal leg and whereby the flanged portion of the inner plate and the wear plate are normally spaced

apart to provide for a limited amount of relative lateral movement of the box and pedestal to which the device is applied.

12. A railway vehicle pedestal liner comprising an inner plate arranged for application to the journal box opposing face of a pedestal leg, a pad of rubber-like material having one side surface bonded to said plate, an outer plate bonded to the other side surface of said pad and having its side edges extending beyond the side edges of the pad, a removable flanged wear plate mounted on said outer plate and having its flanges engaging the opposed edges of the outer plate to take lateral thrusts transmitted between the journal box and pedestal leg to which the device is applied and whereby the flange portion of the wear plate may overlap a portion of the pedestal leg side to limit relative lateral movement of the journal box and pedestal leg, and means securing the wear plate to the outer plate.

13. A railway vehicle pedestal liner unit comprising an inner plate arranged for application to the journal box opposing face of a pedestal leg, a pad of rubber-like material having one side surface bonded to said plate and an outer plate bonded to the other side surface of said pad, said outer plate having its side edges extending laterally beyond the side edges of said pad and spaced apart a greater distance than the sides of a pedestal leg to which it is to be applied, a flanged wear plate removably mounted on said outer plate with its flanges arranged to overlap the sides of the pedestal leg to limit relative movement of said wear plate and said pedestal leg and with its flanges engaging the side edges of said outer plate to prevent relative lateral movement of said outer plate and said wear plate and to transmit lateral thrusts between the outer plate and the wear plate.

14. A device for transmitting thrust between a railway vehicle pedestal leg and an adjacent journal box comprising a flanged inner plate constructed and arranged to be fixed to said pedestal leg, a pad of rubber-like material having one face bonded to said plate, an outer plate bonded to the other face of said pad, and having its side edges extending laterally beyond the side edges of said pad and beyond the flanged portions of said inner plate, and a separate wear plate mounted on said outer plate and having flanges fitting over the side edges of said outer plate and overlapping the pedestal leg and the flanges of the inner plate to transmit lateral thrusts between the wear plate and the outer plate due to relative lateral movement of the journal box and pedestal leg to which the device may be applied, the flanges of said inner plate and the flanges of said wear plate constituting stops to limit such lateral movement.

15. A device for a railway vehicle comprising a pad of rubber-like material, plates of metal-like material bonded to opposite sides of said pad, one of said plates being arranged for fixed application to a railway vehicle part, and a wear member mounted on the other plate and arranged to slidably engage another vehicle part movable relative to the first-mentioned vehicle part, opposite ends of the latter mentioned plate being bent over the edges of the wear member into contact therewith and being secured thereto, there being means spacing the wear member and the plate upon which it is mounted from each other to accommodate the radii at the inner corners between the wear member mounting plate and its bent over ends.

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