

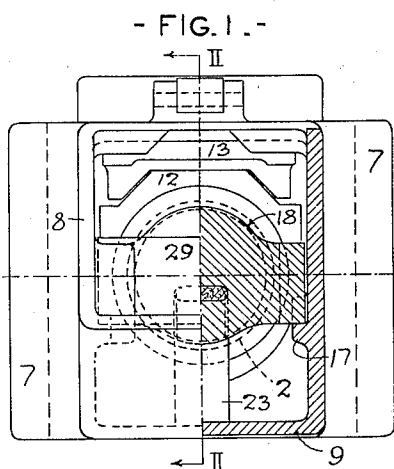
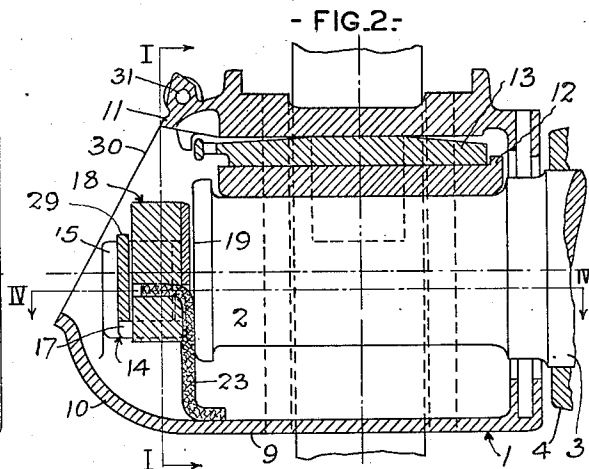
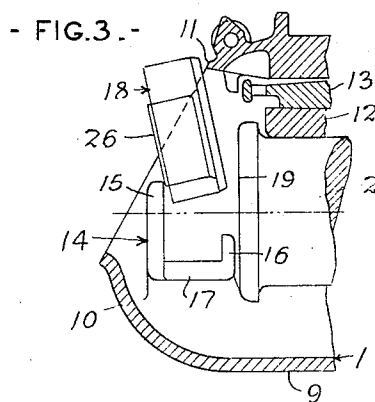
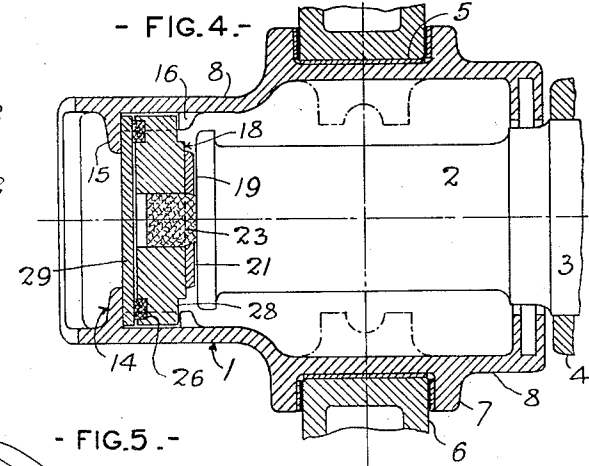
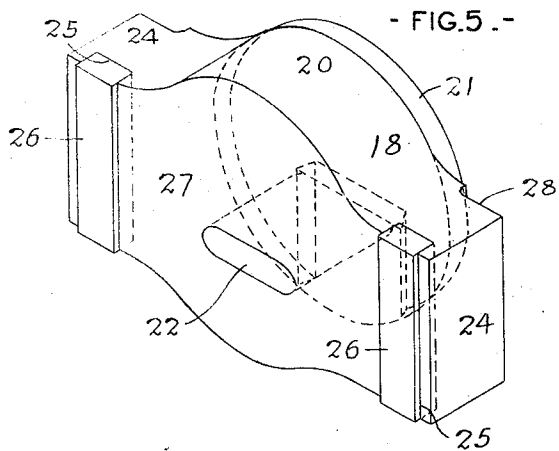
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JOURNAL BOX STRUCTURE

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JOURNAL BOX STRUCTURE

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2 Claims. (Cl. 308—41)

This invention relates to journal box structures, and more particularly to a journal box and axle end thrust bearing associated therewith for an outside journal of a wheeled axle of a railway vehicle.

An object of this invention is to provide a journal box structure embodying an improved journal box and axle end thrust bearing for an outside journal of a wheeled axle of a railway vehicle.

A further object is to provide a structure as aforesaid in which the end thrust bearing is adapted to be removed from and inserted into the journal box without disturbing the journal box assemblage.

Other and further objects of and advantages achieved by the present invention will be apparent from the following description of an approved embodiment thereof.

Referring to the drawing forming a part of this application, Figure 1 is, at the left, a front elevation, and at the right, a section on the line I—I of Fig. 2, of a portion of a railway vehicle embodying the present invention; Fig. 2 is a section on the line II—II of Fig. 1, parts being shown in full and parts being added; Fig. 3 is a view, similar to Fig. 2, but only of the front portion thereof, showing the end thrust bearing being removed from the journal box, the end thrust bearing being shown in full; Fig. 4 is a section on the line IV—IV of Fig. 2, parts being shown in full and in dot and dash lines; and Fig. 5 is an enlarged isometric view of the end thrust bearing, parts being omitted.

The journal box is indicated generally in the drawing by the reference numeral 1. It houses the outside journal 2 of an axle 3 on which is mounted a wheel 4, the hub of which is normally somewhat spaced from the box to provide for lateral movement therebetween. The journal box is secured in the pedestal jaw 5 of a railway vehicle truck side frame member 6, flanges 7 being provided on the box for this purpose. Flanges 7 permit vertical relative movement between the frame and box but prevent lateral relative movement therebetween.

The journal box has side walls 8, a bottom wall 9 which turns upwardly at the front to form a short front wall 10, and a top wall 11. The usual brass 12 and wedge 13 are provided between the journal and the top wall 11. Opposed channel-shaped flanges 14, forming part of the present invention, extend into the journal box from the side walls 8. Each flange has a long front wall 15 in front of top wall 11, a short rear wall

16 to the rear of the front edge of top wall 11, and a bottom wall 17 extending between walls 15 and 16, best shown in Fig. 3.

A bar-like axle end thrust bearing 18, best shown in Fig. 5, is supported by the flanges 14, and is adapted for thrust engagement with the front face 19 of the journal 2. The end thrust bearing is substantially similar to the end thrust bearing shown in Patent No. 2,272,865, to J. G. Blunt, dated February 10, 1942. It includes a central circular portion 20 to the rear face of which is secured, as by welding, a wear plate 21, the rear face of the wear plate 21 being adapted to engage the journal face 19 when the axle moves in its direction laterally relative to the frame and box.

A slot 22 is provided in the portion 20 and plate 21 for a lubricating wick 23. The end thrust bearing is raised at the bottom and lowered at the top on each side of the portion 20 providing reduced extensions 24. Vertical grooves 25 are formed in the front face of each extension 24, and blocks 26, which may be of any well-known appropriate somewhat resilient material, are disposed in the grooves 25. The end thrust bearing has a front face 27 formed by the front face of the portion 20, the front face of each extension 24 and the front face of each block 26. The front faces of the blocks 26 are spaced somewhat forwardly of the front faces of portion 20 and extensions 24.

The end thrust bearing has a rear face 28 formed by the rear of the plate 21 and the rear faces of the extensions 24. The rear faces of the extensions 24 are spaced forwardly from the rear face of the plate 21 as is clearly shown in Fig. 4.

When the end thrust bearing is supported by the flanges 14, the rear faces of the extensions 24 are adjacent the rear walls 16 and the wear plate 21 is normally in slightly spaced relation with the journal face 19. The channels formed by the walls of the flanges 14 are, for a purpose later to appear, made wider than the portions of the end thrust bearing they support, providing a space between the bearing and the front walls 15.

A bearing backing plate 29, forming part of the present invention, extends across the box and has its end portions disposed in the space between the front walls 15 and the blocks 26, and is supported by the walls 17. The backing plate is of sufficient height to extend well above and below the axis of the journal 2 and is of suitable width to prevent appreciable rattling and banging of the bearing. As wear of the engaging parts

causes looseness after the railway vehicle has been in service over a period of time, the backing plate 29 may be replaced by another backing plate of suitable added thickness.

The entire force of lateral thrusts of the axle is taken by the walls 15, which are formed integral with the sides of the box. To provide adequate strength, so that they may take the thrust direct, these walls are extended above and below the axis of the journal 2 as aforesaid, and are extended well inwardly. This required height of the walls 15 limits the space available between the top of the walls 15 and the top wall 11 of the journal box for the removal or insertion of the end thrust bearing.

It is, of course, desirable to be able to remove the end thrust bearing, and to insert a new one, without having to move the journal box, or to remove various parts of the journal box structure, that is to say, disturb the journal box assembly.

It will be understood that the invention is primarily intended for use with a journal box following standard practice, and is especially adapted for a journal box of integral structure. This requires a quite definite positioning, in relation to the face 19 of the journal, of the forward edges of the top wall 11, side walls 8 and front wall 10, which together provide an inclined box opening 30. This opening is closed by a lid (not shown), a lug 31 being provided for hingedly connecting the lid, all according to usual practice. The opening 30 must be given the required inclination and the wall 10 must not extend too far forwardly, all according to usual railroad practice. This provides for a limited space in which the bearing is housed between the face 19 of the journal and the opening 30. Thus a problem is presented to remove the bearing, when occasion requires, through the opening 30, from its position adjacent the face 19 of the journal without disturbing the assemblage of the journal box and its associated parts.

As aforesaid, the walls 15 must be of a sufficient height above the axis of the journal to provide the required support for the axle thrusts. Therefore there is insufficient vertical space between the upper edges of the walls 15 and the forward edge of the top wall 11 to permit the bearing when vertically raised from its supported position, to clear the top edges of the walls 15 to permit it to be then moved horizontally through the opening 30. Therefore the only recourse in such case is to vertically raise the bearing to clear the walls 16, there being sufficient space for this, and to then tilt the upper end of the bearing forwardly to clear the forward edge of the wall 11 so that the bearing can be then, in its inclined position, further raised until it clears the walls 15.

If the bearing were of a thickness equal to the channels provided by the flanges 14, this extent of tilting could not be accomplished because the lower end of the bearing would too early strike the face 19 of the journal 2. To overcome this latter difficulty, so that the bearing, when raised vertically to clear the wall 16, may be then tilted forwardly sufficiently so that its upper end will clear the wall 11, the bearing is made of a considerably less thickness than the width of the channels formed by the flanges 14, and the plate 29 is employed to fill the space thus provided between the bearing and the walls 15.

The thrust bearing assemblage as thus de-

scribed, and which comprises the present invention, renders it easily possible to remove or insert the thrust bearing without disturbing the journal box assembly. To accomplish this removal the plate 29 is first moved vertically upward and out through the opening 30 from its seat between the bearing and walls 15. The walls 15 are sufficiently forward of the forward edge of the top wall 11 to permit this vertical movement. The free space thus provided between the bearing and the walls 15 by removal of the plate 29 permits the bearing, after it has been vertically lifted to clear the walls 16, to be tilted between the walls 15 and the face 19 to a sufficient angle to clear the forward end of the wall 11, whereupon the bearing is further raised in its tilted position through the opening 30 until it clears the walls 15.

The forward end of the wall 11 as shown in Fig. 2 is vertically above the bearing at about its center plane. Obviously if the space provided by the removal of the plate 29 was great enough, the bearing could be moved forwardly against the walls 15 and raised vertically through the opening 30, but this can not be done because first, the bearing must be of sufficient thickness to withstand the thrust and, second, the forward position of the walls 15 is limited by the permissible forward position of the forward edges of the sides 8. Therefore accordingly the only recourse is to tilt the bearing as aforesaid to effect its removal. The bearing, as is obvious, may be inserted into the box by a reverse procedure.

While there has been hereinbefore described an approved embodiment of this invention, it will be understood that many and various changes and modifications in form, arrangement of parts and details of construction thereof, may be made without departing from the spirit of the invention and that all such changes and modifications as fall within the scope of the appended claims are contemplated as a part of this invention.

The invention claimed and desired to be secured by Letters Patent is:

1. A journal box structure comprising a journal box having opposed side walls, a top wall and a bottom wall between said side walls, and a front opening, each side wall having thereon and extending into said box, a channel-shaped flange having a long front wall spaced at its top edge forwardly and downwardly from said box top wall, a short rear wall spaced at its top edge rearwardly and downwardly from the front edge of said box top wall, and a bottom wall between said front and rear walls; a bar-like journal end thrust bearing disposed in said box and carried at its opposite end portions by said flanges, each of said end portions having a rear face adjacent its correlated flange rear wall, a bottom face engaging its correlated flange bottom wall, and a front face spaced from its correlated flange front wall, the height of said bearing between said bottom faces and the top of said bearing being greater than the vertical height of the portion of said opening above the upper edges of said front walls; and a backing plate disposed in said box in the space between said bearing and said front walls, forwardly of said box top wall and in vertical line with said opening, said plate being carried by said flanges and having a rear face engaging said bearing front face and a front face engaging said front walls.

2. A journal box structure comprising a jour-

nal box having opposed side walls, a top wall and a bottom wall between said side walls, and a front opening, each side wall having thereon and extending into said box, a flange having a horizontal bottom wall and a vertical wall disposed forwardly thereof spaced at its top edge forwardly and downwardly from said box top wall; a bar-like journal end thrust bearing disposed in said box and carried at its opposite end portions by said flanges, said end portions having each a bottom face engaging a flange bottom wall and a front face spaced from the adjacent vertical wall, the height of said bearing between said bottom faces and the top of

said bearing being greater than the vertical height of the portion of said opening above the upper edges of said vertical walls; and a backing plate disposed in said box in the space between said bearing and said vertical walls, forwardly of said box top wall and in vertical line with said opening, said plate being carried by said flanges and having a rear face engaging said bearing front face and a front face engaging said vertical walls, said plate positioning said bearing end portions with their rear faces disposed rearwardly from the front edge of said box top wall.

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