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OIL CONVEYING MEMBER FOR JOURNAL BOXES

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Fig. 1.

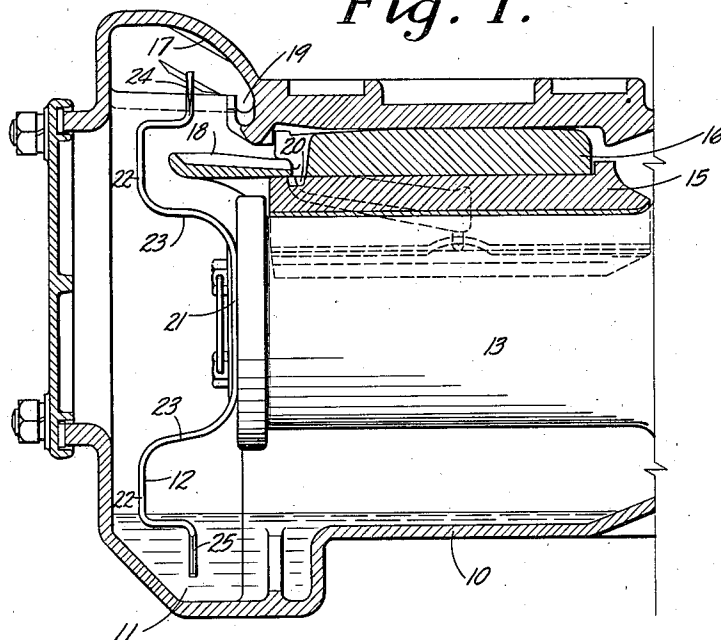
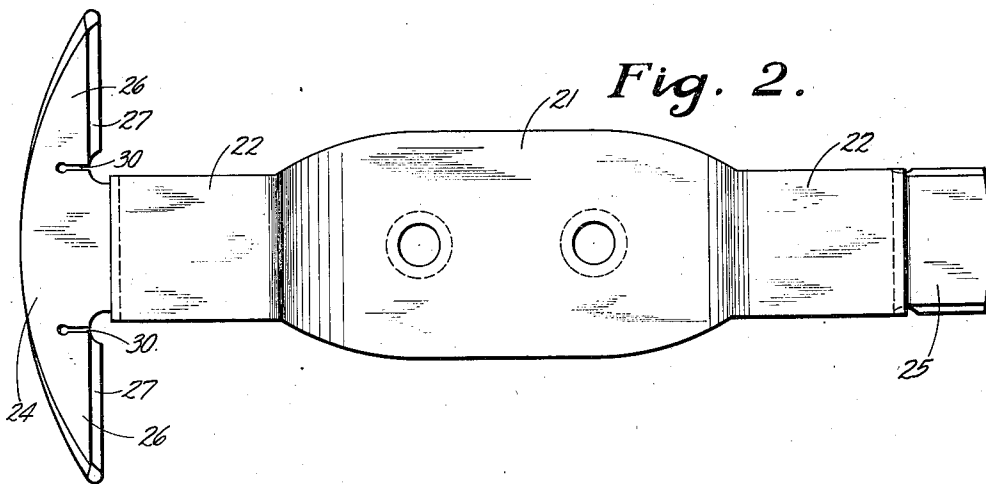


Fig. 2.



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OIL CONVEYING MEMBER FOR JOURNAL BOXES

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Application February 19, 1941, Serial No. 379,615

4 Claims. (Cl. 308—86)

This invention relates to journal boxes and more particularly to an oil conveying member for a free oiling type of journal box.

In the type of journal box to which this invention is directed the oil conveying member is mounted on the end of the journal and carries oil from a reservoir in the bottom of the box to a region in the top of the box where the oil is distributed to the bearing surface of the journal.

In service the oil conveying member is subjected to severe shocks and caused to vibrate due to the car passing over uneven track, rail joints, etc., and in time the member fails because of metal fatigue. Various improvements have been made in the member to increase its life but eventually a time arrives when breakage due to fatigue causes failure of the oil delivery system.

The present invention deals with a construction providing a factor of safety to indicate the approximate state of fatigue in the member so that it may be replaced with a new member before breakage occurs in a place that would result in failure of the member to deliver oil.

In the drawing:

Figure 1 is a vertical sectional view through a journal box showing the general arrangement of oil conveying member and box; and

Figure 2 is a plan view of the oil conveying member.

The journal box 10 has an oil reservoir 11 at the bottom thereof into which dips the oil conveying member 12 secured to the end of journal 13. Between journal 13 and the top of the box is a bearing member 15 and wedge member 16. Oil in the reservoir is picked up by the oil conveying member and is either thrown on surface 17 or dropped onto ledge 18 on wedge member 16 and is then conducted by suitable passages 19 and 20 to the bearing surfaces of the journal and member 15.

The oil conveying member illustrated has a central portion 21 adapted to be secured to the end of the journal, and offset arms 22 of lesser width than the central portion and joined therewith by substantially horizontal portions 23. Portions 23 extend forwardly beyond ledge 18 so as to clear the latter as the member rotates with the journal. At each end member 12 is bent inwardly of the box so as to overlie ledge 18 as the member rotates and is formed with blades 24, 25 adapted to dip into oil reservoir 11. Blades 24 and 25 are shown different in shape so as to obtain the most efficient distribution of oil at various speeds. Blade 24 is formed with lateral projections 26 each having an edge 27

from which the oil drips onto ledge 18 at slow car speeds. At higher speeds oil is thrown by centrifugal force from blade 25 onto surface 17 at the top of the journal box. At high speeds oil is also thrown from the outer edge of blade 24 and projections 26.

As the journal to which the oil conveying member is bolted is not supported on springs, shocks from the rail are transmitted to the member and cause the latter to vibrate. It is therefore essential that the oil conveying member be constructed in such a manner that stresses due to vibration are not concentrated in regions where, if failure of the member occurred, damage to the mechanism would result. A construction wherein the stresses are substantially uniformly distributed is shown in Newberry Patent No. 2,204,376, issued June 11, 1940. However, it has been found that even with such a construction the life of the oil conveying member can not be determined in terms of miles or length of time of service since conditions may vary considerably with different applications. For instance, the member may be used on a journal having a wheel with a flat spot or on a car passing over corrugated or rough track. In such cases the oil conveying member will be subjected to vibrations above the average.

The present invention relates to means for indicating the degree of fatigue of the metal so that the member may be replaced before it fails in a region which would impair its function of conveying oil, or before it damages the journal box and parts. I have found that by weakening projections 26 as by a slot 30, the projections can be made to break off at some predetermined time before the member breaks at an undesired point. It is important, however, that the indication given by a projection breaking off is substantially uniform for all members of similar construction. After many experiments it was found that to obtain positive and consistent results, slot 30 should be cut deep enough to remove at least half the metal from the projection. A series of tests on members having the slot cut so as to leave about 45% of the metal through the section showed a very uniform factor of safety. The average factor of safety for ten members was $2\frac{1}{2}$ to 1, with the lowest slightly under 2 to 1. On another group of members slightly over half of the metal was left after cutting the slot. The results on these members were very erratic and several broke in undesired places between blade 24 and the journal, leaving the portions corresponding to projections 26 in-

tact. If a break occurs radially inwardly of blade 24 the broken piece is so large that it may be struck by the remainder of the member, as the latter rotates, and bend the member to such an extent that it can not properly convey oil to the upper part of the box. In the present construction when either of projections 26 breaks off it falls to the bottom of the reservoir where it can do no damage. Moreover, even if both projections 26 break, the remainder of blade 24 will dip into the oil and convey a substantial amount to the top of the journal box.

Railroad journal boxes are inspected at regular intervals, thus if one of the projections 26 is found broken at a periodic inspection an indication will be given that the oil conveying member has neared the end of its useful life and should be replaced so as to assure proper functioning of the oil delivery system and to prevent damage to the journal box and parts.

The terms and expressions which I have employed are used as terms of description and not of limitation, and I have no intention, in the use of such terms and expressions, of excluding any equivalents of the features shown and described or portions thereof, but recognize that various modifications are possible within the scope of the invention claimed.

What I claim is:

1. An oil conveying member for a journal box having a radially extending blade and a lateral projection at the outer end of said blade, and a slot substantially at the juncture of said blade and said projection providing a weaker section of metal in the region of said slot than is present in the remainder of said member radially inwardly of said slot.

2. An oil conveying member for a journal box having a radially extending blade and a lateral projection at the outer end of said blade, a slot extending at least halfway through said blade adjacent the juncture of said blade and said projection, said slot providing a weakened section in said projection so that the latter will break off due to vibration before any breaks will occur in the remainder of said member radially inwardly of said slot.

3. An oil conveying member for a journal box adapted to be subjected to shocks and vibrations, said member having a radially extending blade and lateral projections at the outer end of said blade, said blade and projections providing an oil receiving surface adapted to dip into an oil reservoir at the bottom of a journal box, one of said projections being joined to said blade by a section of metal less than half the area of sections of metal on either side of said first named section and immediately adjacent thereto, said one projection being adapted to break when subjected to shocks and vibrations before the remainder of said member.

4. An oil conveying member for a journal box having an oil contacting blade at the end thereof which is substantially flat in the plane of rotation of said member when the latter is secured to a journal, and means for indicating the amount of fatigue in said member comprising a slot in said blade of such depth that said blade will break in the plane of said slot before a break occurs in other parts of the member.

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