Feb. 28, 1956 W. J. BEASON 2,736,623

WASTE RETAINER FOR JOURNAL BOXES

Filed June 1, 1953

Fig. 1.

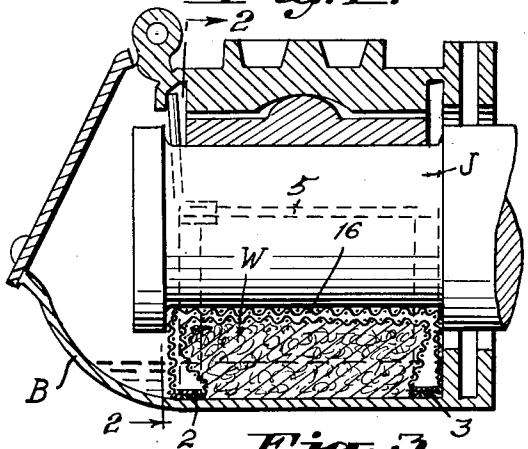


Fig. 2.

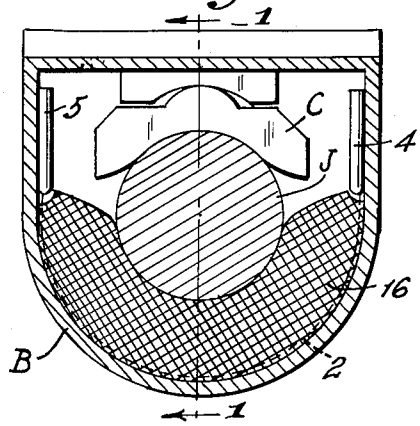


Fig. 3.

Fig. 5.

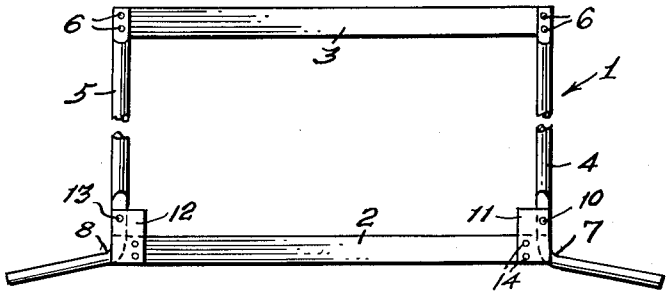


Fig. 4.

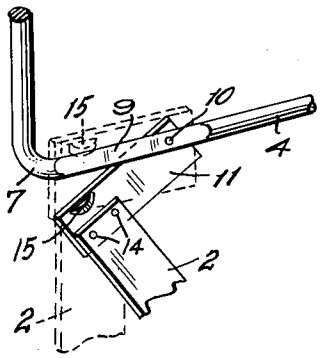
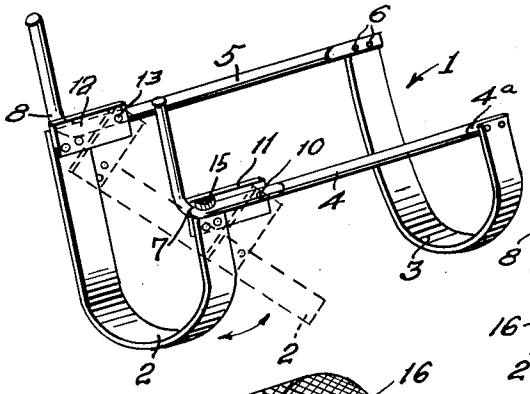


Fig. 6.



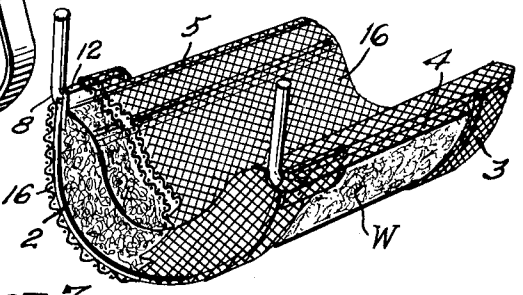
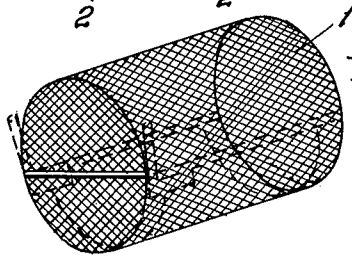


Fig. 7.



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WASTE RETAINER FOR JOURNAL BOXES

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11 Claims. (Cl. 308—89)

In the standard railway journal box the load is conveyed from the frame of the car to the box and thence through the brass or bearing to the journal which is a continuation of the axle connecting each pair of flanged wheels. The brass rests upon the upper half of the journal and conforms generally to the shape thereof, while the lower half of the journal is exposed to lubricating means. The load is taken on the top surface of the brass. The lower portion of the journal box is generally semi-cylindrical in shape with axis of symmetry parallel with, or coincident with, the axis of the journal and is made in the form of a reservoir for oil. Waste, which is a mass of unwoven cotton threads, is stuffed into the box so that its lower portion is immersed in the oil while its upper portion contacts the lower or under surface of the journal. The capillary action of the waste thus conveys oil from the reservoir to the journal to keep the latter lubricated during travel of the car.

It is essential for proper lubrication, that the mass of oil-soaked waste be held in proper position within the journal box. For example, if some of the waste works up between the journal and bearing due to rough handling of the car and other reasons, lubrication is cut off to certain areas of the bearing, which together with uneven loading caused by the waste can result in local overheating, excessive oil consumption and eventually a dry bearing. Furthermore, prior to my invention the amount of oil added periodically to each bearing had to be limited because, if too much were added, the waste became oversaturated and mushy so that it tended to float or rise past its proper position within the box and again work its way between the bearing and the journal. On the other hand, if too little oil were added the results were even more serious in causing overheating, excessive wear and dry boxes. In addition, it was difficult to keep the waste from working or pushing out into the front or outer part of the box known as the oil well, and from working out between the journal and box at the inside or side nearest the wheel, both with serious possibilities of bearing trouble.

For these reasons, it is highly important to keep the oil-soaked waste in proper position within the box and numerous attempts have been made to effect this purpose by the use of springs, clamps or wires.

None of the prior art devices of which I am aware have been fully successful because it has heretofore not been possible at all times to keep the waste in position. Due to sudden application of the brakes and occasional rough handling of the car, some of the waste would work out of position, either between the bearing surfaces, outwardly into the oil well or inwardly past the journal to the outside of the box. Furthermore, all of the prior art devices require the addition of the proper amount of oil to prevent the aforesaid mushy condition of the waste, while due to rough handling of the car, the metal parts of the prior art retainers at times contacted the journal button or journal bearing surfaces and caused scoring and excessive wear.

It is therefore among the chief objects and purposes of my invention to provide a waste retainer:

1. Wherein the waste is positively and at all times retained in proper position for effective and adequate lubrication of the bearing under all conditions of use.

2. Wherein none of the waste can work upwardly between bearing surfaces or outwardly or inwardly along the journal axis.

3. Wherein more oil can be added than was previously deemed expedient to thereby improve lubrication and make oil additions less frequent.

4. Which can be easily and quickly inserted into proper place within the box and which when in position is firmly retained therein with all metal surfaces widely separated from and out of contact with the journal.

5. Which enables the quick placement of waste in the box or the rapid addition of more waste when needed.

6. Wherein dirt, grit or other substances which find their way into journal boxes, are kept away from and out of contact with the bearing surfaces and waste so that bearing life and time between changes of waste are lengthened.

7. Which enables inspection of the bearing when desired, without removal of the waste.

8. Which is inexpensive to fabricate, install, replace and service, and a general advance and improvement in the art.

Other objects and advantages of the invention will be apparent after a study of the following disclosure in connection with the drawing.

In this drawing:

Figure 1 is a central vertical section through the journal box of a railway car with my invention in place therein,

Figure 2 is a cross-section corresponding to Figure 1 and taken in a plane identified by the line 2—2 of Figure 1,

Figure 3 is a plan view of the retainer assembly in unflexed position and before the net is applied,

Figure 4 is a perspective view corresponding to Figure 3, but showing the retainer assembly in the flexed operating position it assumes within a journal box,

Figure 5 is a detail view to an enlarged scale showing how the outer spring band of the retainer assembly may be pivotally adjusted relatively to its supporting rods,

Figure 6 is a perspective view showing the retainer assembly and net in the operating relation they assume within a journal box, and

Figure 7 is a perspective view of one form of net showing in dotted lines the general position of the retainer therein prior to insertion into the box.

Referring in detail to the drawings, and particularly to Figures 3 and 4, the numeral 1 identifies generally the retainer framework or assembly forming a component part of my invention. This assembly consists of first and second straps, strips or members 2 and 3 which may be of about 14-gauge spring steel, one inch wide and, in one model successfully used, about 16 inches long. The ends of these straps are connected by spacer rods or elements 4 and 5 which may be one-quarter inch in diameter and which are flattened at the back end, that is, the end first inserted into the journal box, as indicated upon Figure 1, for convenience in drilling and attachment to the ends of strap 3. This connection in the model shown, is effected by rivets 6 so that as shown upon Figure 3, the ends of strap 3 are rigidly secured to the respective ends of rods 4 and 5. The strips and rods conjointly form or define a frame.

The other ends of the rods are bent at an obtuse angle of somewhat more than 90°, as at 7 and 8 to form end portions which are a little over four inches in length in the model shown. The main portion of each rod closely adjacent the bend therein, is flattened as shown at 9, Figure 5, for rod 4. This portion is drilled at a point

about one and one-half inches from the bend, to receive a rivet **10** which pivotally connects the rod with one end of a short connector bar **11** conveniently of the same spring steel as straps **2** and **3**. The other bar **12** is pivotally connected in a like manner with the forward flattened part of rod **5** by rivet **13**.

The ends of strap **2** are attached as by riveting at **14**, Figure 5, to the forward ends of the connector bars **11** and **12** and at substantially right angles thereto. Thus, when the retainer assembly just described is in the position shown upon Figure 3, the pivot axes of bars **11** and **12** are parallel, while, when the straps are held in the bent or flexed position of Figure 4, as by the side walls of the journal box, these axes are aligned and the strap **2** can be pivoted forwardly or rearwardly within the box, for example, to the full line position shown at Figure 5, to facilitate loading or renewal of waste to the net. If desired, lugs such as **15**, Figures 4 and 5, may be provided upon the connector bars **11** and **12**, as an aid in releasably locating the strap **2** in its normal or operating position shown in dotted lines upon Figure 5. When in this position, the lugs **15** will abut one side of the rods, while the ends of strap **2** will abut the other side whereby to releasably retain the strap in operating position for pivotal movement in either direction as aforesaid. It will be understood that the frame may be used with straps **2** and **3** flexed in either direction. For example, when flexed in the opposite direction from that shown upon Figure 4, bars **11** and **12** will be on the outside, and pivotal movement of the strap **2** outwardly, will cause its end portions to slide over and in contact with the upturned ends of the rods **4** and **5**, to cam them slightly toward each other. This action will ease or release the pressure of rods **4** and **5** along the sides of the journal box and facilitate adjustment of the net, as subsequently described.

In connection with and as a component part of my invention, I use a net, indicated generally at **16**, Figures 1, 2, and 6, which may be of woven fabric or soft wire with meshes sufficiently fine to prevent passage therethrough of the waste commonly used in the lubrication of journal boxes of railway cars. The net may be of generally tubular form. Preferably, one end, that is, the end contiguous strap **3**, is closed by a closure piece of the same fabric or material as is used to make the main body portion of the net, while the other end is closable by any suitable closure means, after the retainer assembly has been properly positioned within the journal box.

The relation of the net, retainer assembly journal and journal box when the parts are in operating position, is a very important one in carrying my invention into practice and may be best visualized as follows: Assume the retainer springs to be flexed to the position shown at Figure 4 and, while in this position, the retainer assembly is inserted into the net, leaving only the upturned ends of rods **4** and **5** protruding. See Figure 7. Assume for clearness of understanding, that the journal box is empty and that the wheel journal may be subsequently placed within the box. Now if the retainer assembly and net are inserted into the box to the position shown upon Figure 1, the resiliency of the straps **2** and **3** causes them to fit snugly in and about the internal contour of the box as shown for strap **2** in Figure 2, while the ends of the upturned portions of rods **4** and **5** are closely adjacent the top of the box and are held against outward movement by a projection on the inner side of the box or a downward flange on the box. Furthermore, the rods **4** and **5**, are held by the resiliency of spring straps **2** and **3** in firm contact with the walls of the box along lines in parallel relation with the journal axis; and since these are within the net, the latter is also firmly held to the inside of the box along these lines. Since it is assumed that no journal is presently in the box, the top portion of the net extending between rods **4** and **5** extends loosely across the box.

Now let it be assumed that the journal J is positioned within the box. The end of the net then takes a form generally indicated in Figure 2 in which the top portion of the net is pressed downwardly and fits about the lower surface of the journal.

Next, the outer strap **2** is pivoted outwardly to enable waste W to be stuffed between the lower surface of the box B and the lower portion of the net. The strap **2** is then pivoted back to normal or operating position. As a result, the net assumes a shape substantially as shown upon Figure 1 wherein both top and bottom portions of the net between straps are forced upwardly by the waste into contiguous relation with and about the lower half of the journal. Lubricating oil may then be added as desired or indicated by standard practice.

The foregoing explanation is believed to make clear the final shape, position and relation of the retainer net and journal within the box whereby the net and retainer cooperate to form with the box is generally semi-cylindrical chamber from which the waste cannot escape but which at the same time assures that the waste performs its proper function of keeping the journal lubricated at all times during travel of the car. Actually, of course, the journal is in position when the retainer and net are inserted into the box. The only difference is that the upper surface of the net between rods **4** and **5**, is depressed downwardly to pass beneath the journal when the retainer and net are inserted. By turning strap **2** to or beyond the dotted line position of Figure 4, or outwardly in the opposite direction, insertion of the retainer and net into the box may be effected very quickly and easily after only a small amount of practice.

The precise shape of the net before insertion of the retainer into it and before and net and retainer are inserted into the box can be varied as dictated by practice and/or the material of which the net is made. For example, it may be found more convenient to make it generally spool-shaped instead of the cylindrical form shown upon Figure 7 so as to more readily conform to the final shape shown upon Figure 1 without substantial stretching or distorting of the net. As previously stated, the net may be of woven fabric or material and, if desired, that part or area of the net directly in contact with the journal where the oil passes through from the waste to the journal and bearing, may be of material especially adapted to convey oil, such as wick material or the like. As another example, the net may be made of cotton cord about ⅛" in diameter with 1" meshes. Cotton cloth is then sewed over the net except for that portion directly in contact with the journal to thereby allow the waste to push against the journal while, at the same time, the cloth keeps small bits of waste from working through the net over those areas not in contact with the journal.

I have thus provided a waste retainer for journal boxes which is very simple and inexpensive to build and install, while highly efficient in trapping the waste and holding it in proper position within the box to effect efficient lubrication of the bearing and realize all of the objects theretofore explained. As indicated upon Figure 7, the outer end of the net may be provided with a normally horizontal diametral slot or opening through which the frame may be conveniently positioned inside the net. It is contemplated that the waste may also be inserted into the bag or net itself through this opening instead of between the net and journal box. However, the arrangement shown provides two layers of the net over its area in contact with the journal and thus effects a longer wear of the net. Nets may be replaced over the frames at periodical intervals, usually at the same time the bearing is oiled and serviced, once every twelve to fifteen months. Each frame is usable indefinitely since

it is entirely out of contact with the journal or any other rotating surface.

While I have fully disclosed the form of my invention presently preferred by me, I desire that this disclosure be taken in an illustrative rather than a limiting sense. It is my desire and intention to reserve all modifications falling within the scope of the subjoined claims.

Having now fully disclosed the invention what I claim and desire to secure by Letters Patent is:

1. The combination with a journal box of a railway vehicle, a frame comprising first and second elongated members of resilient material each adapted to be flexed within the box to extend in axially-spaced relation between opposite sides of the box and in contact with the lower surface contour of the box, first and second rods each connected at its ends with the corresponding ends of said members, to be held thereby in contact with and along respective sides of the box generally parallel with the axis of a journal therein, and a bag of oil-permeable flexible material interposed between said box and frame below the journal and held by said frame in contact with the box surface along a substantially continuous line defined by said members and rods to define a pocket for lubricating waste between said box and journal.

2. In a waste retainer for the journal box of a railway vehicle, first and second continuous rigid rods each adapted to extend in contact with and along the respective inner side walls of the journal box, a pair of leaf springs interconnecting said rods at the ends thereof and adapted for flexure to resiliently urge said rods into contact with the respective sides of the box where placed therein, while extending in contact with the contour thereof beneath and about a journal in the box, and a flexible, open-mesh bag enclosing said rods and springs and adapted to be held thereby in contact with the walls of the box whereby to define a closed compartment for lubricating waste between the bag and journal box.

3. A waste retainer for the journal box of a railway vehicle, in combination, a retainer frame adapted to be inserted in and retained in position within the box, said frame comprising first and second straps of spring material each adapted for flexure to fit the box at respective ends thereof in contact with the inner lower surface of the box along the contour thereof beneath and about the journal therein, a pair of rods connecting corresponding ends of said straps and adapted to be held thereby in position along respective sides of the box on opposite sides of the journal, and a bag of flexible open-mesh material enclosing said frame and adapted to be held by the resiliency of said straps in substantially continuous contact with the inner surface of a box along a closed line conjointly defined by said straps and rods.

4. In combination with a railway vehicle journal box having a journal therein and a load-resisting bearing supported on said journal, a retainer frame comprising first and second resilient elongated members flexed by and within said box and extending about and in contact with the contour of said box beneath said journal, each in a respective axially-spaced plane normal to said journal, a pair of continuous rigid rod elements each connected at its ends with said members to unite and hold the same in axially-spaced relation, said rod elements being held by said members in contact with and along said box on opposite sides of said journal, and a net enclosing said frame and held thereby in contact with said box along a substantially continuous line conjointly defined by said members and elements and extending beneath said journal, to define a closed waste-receiving pocket between said net and box about the lower portion of said journal.

5. In combination with a railway vehicle journal box having a substantially semi-cylindrical lower portion and a journal and a load-supporting bearing resting on said journal within said box, a retainer frame comprising first and second resilient straps each under flexure to extend in axially-spaced relation within said box beneath said journal at the respective ends of said journal, a pair of rods, first means connecting the ends of said first strap with corresponding ends of said rods respectively, second means connecting the ends of said second strap with respective ones of said rods to maintain said straps in spaced relation, said rods being held by said straps in yielding relation within and along respective sides of the box, and a net of oil-permeable material enclosing said frame and held thereby in contact with said box along a substantially continuous line defined by said straps and rods, said net forming a closed waste-receiving pocket within said line beneath said journal.

6. In combination with the journal box of a railway vehicle, a journal therein and a load-supporting bearing resting on the journal, of a waste retainer removably fitting within said box and comprising first and second resilient steel straps each flexed to extend within and about the inner and outer ends respectively, of said box to follow the contour thereof beneath the journal, a pair of rods, means rigidly connecting the ends of said first strap with respective ends of said rods at right angles thereto, means connecting the ends of second strap adjacent the other ends, respectively, of said rods for pivotal movement about an axis transversely of the journal, said rods being urged by said straps into contact with and along opposite sides of said box, and a bag of oil-permeable flexible material enclosing said straps and rods and being held thereby in contact with the box along a substantially continuous line conjointly defined by said straps and rods, to define a closed waste-receiving pocket between said bag and the lower wall of the box.

7. In a waste retainer for the journal box of a railway vehicle, a frame comprising first and second metallic resilient strips adapted for flexure into generally semi-circular shape within a journal box to fit snugly about the walls thereof beneath a journal in the box, first and second rods each secured at its ends to the contiguous ends of respective strips to space the same, whereby said rods may be urged by said strips into contact with the sides of the box, and a mesh bag containing said frame and held against the inner surface of the box by said strips and rods to define a closed waste-receiving pocket extending about and beneath the journal.

8. The combination with a journal box and a journal therein, of a frame comprising first and second resilient metallic strips flexed into form generally conforming to the inner contour of said box to extend beneath and about said journal and spacer rods each secured at its ends to contiguous ends of respective strips to space said strips axially of said journal, said strips urging said rods into contact with the sides of said box at the level of said journal, and a bag of open-mesh flexible material encompassing said frame, said bag being urged by said frame into contact with said box along the lines of contact therewith of said strips and rods, whereby to define a foraminous closed waste-receiving pocket extending beneath and about said journal in contact therewith.

9. In a waste retainer for the journal box of a railway vehicle, a frame comprising first and second elongated resilient members each adapted for flexure to fit within and about the lower portion of the journal box in contact with the inner surface thereof, first and second rigid elongated elements, said first member being rigidly connected at its ends with a respective end of said first elements, means pivotally connecting the ends of said second member to the remaining ends of said elements, said members urging said elements toward contact with and along the walls of the box when said frame is therewithin, and an open mesh flexible net enclosing said frame.

10. In combination with a railway vehicle journal box having a substantially semi-cylindrical lower portion and a journal and a load-supporting bearing resting on said journal within said box, a retainer frame comprising first and second resilient straps each under flexure to extend in axially-spaced relation within said box beneath said jour-

nal at the respective ends of said journal, a pair of rods, first means connecting the ends of said first strap with corresponding ends of said rods respectively, second means connecting the ends of said second strap with respective ones of said rods to maintain said straps in spaced relation, said rods being held by said straps in yielding relation within and along respective sides of the box, and a net of permeable flexible material held by said frame in contact with said box along a substantially continuous line defined by said straps and rods, said net forming a closed waste-receiving pocket within said line beneath said journal, said second means comprising aligned pivots whereby said second strap is pivotable within the box top open said pocket.

11. In combination with a railway vehicle journal box having a substantially semi-cylindrical lower portion and a journal and a load-supporting bearing resting on said journal within said box, a retainer frame comprising first and second resilient straps each under flexure to extend in axially-spaced relation within said box beneath said journal at the respective ends of said journal, a pair of rods, first means connecting the ends of said first strap with corresponding ends of said rod, respectively, second

means connecting the ends of said second strap with respective ones of said rods to maintain said straps in spaced relation, said rods being held by said straps in yielding relation within and along respective sides of the box, a net of flexible oil-permeable material enclosing said frame and held thereby in contact with said box along a substantially continuous line defined by said straps and rods, said net forming a closed waste-receiving pocket within said line beneath said journal, the outward ends of said rods being bent upwardly and engaging behind lugs in said box and said first strap engaging the inner end of said box whereby said frame is held against axial movement within the box.

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