

May 16, 1961

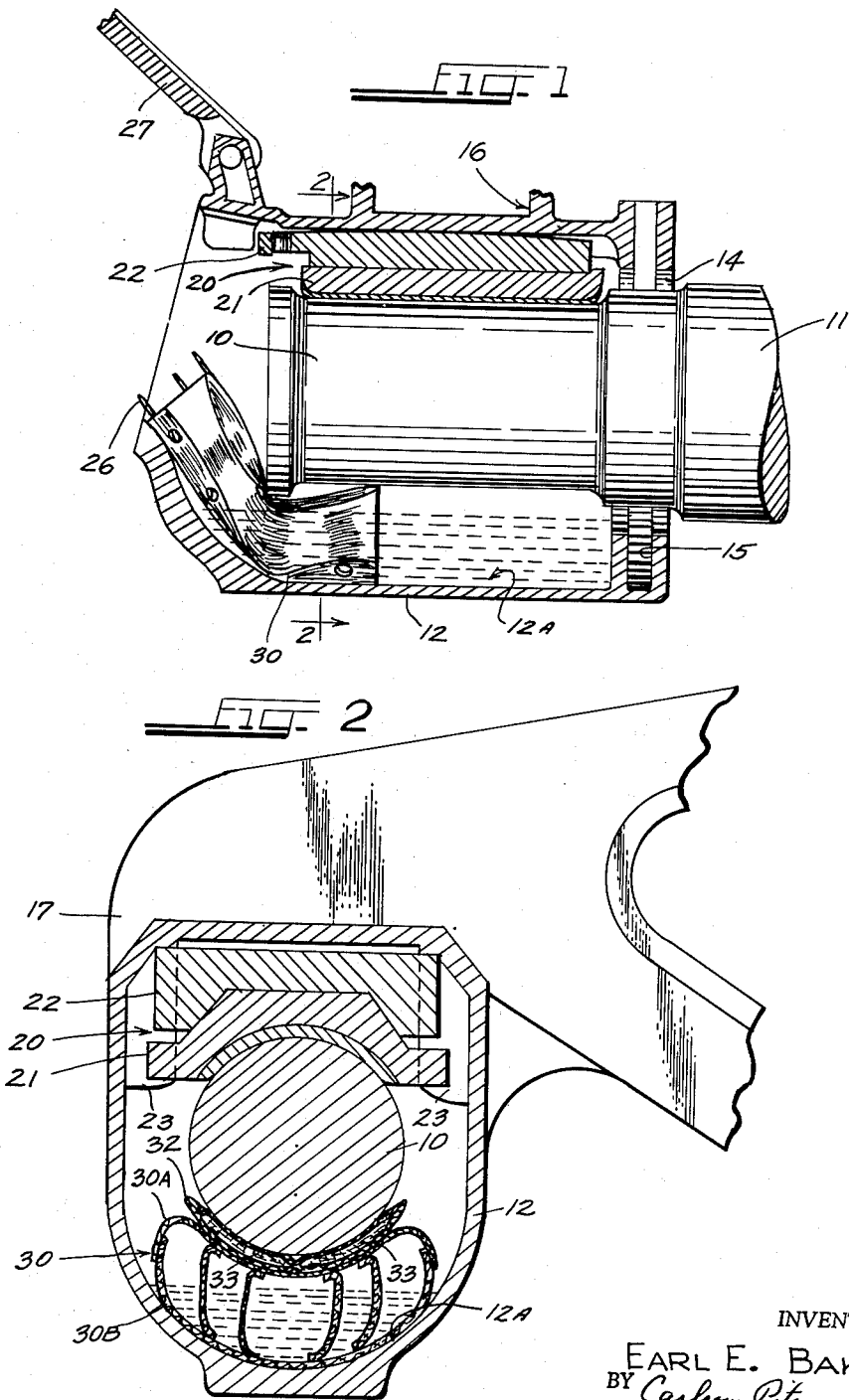
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2,984,527

JOURNAL LUBRICATING DEVICE

Filed Oct. 28, 1957

2 Sheets-Sheet 1



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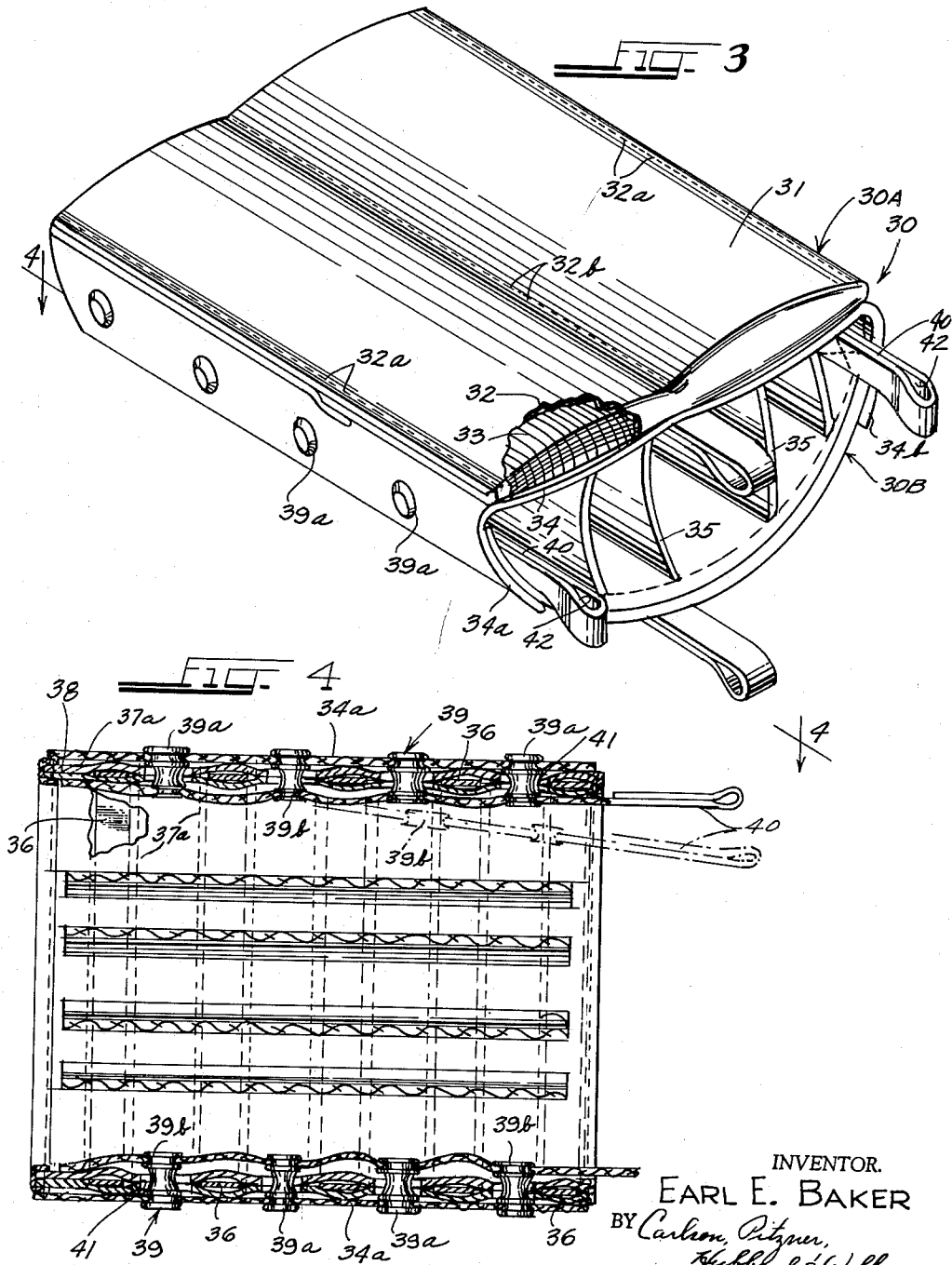
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JOURNAL LUBRICATING DEVICE

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Filed Oct. 23, 1957, Ser. No. 692,622

7 Claims. (Cl. 308—88)

The present invention relates generally to lubricating devices and more particularly, to such devices that are intended primarily, through not exclusively, for lubricating railroad car journals.

Railroad cars are supported on trucks which consist of a framework mounting two or more pairs of journal boxes for the reception of bearings and the outer end portions, or journals, of the wheel axles. In the most common construction the journal extends into the inner end of the journal box through a dust-sealed opening. Upon the journal rests a bearing element or "brass" with a shoe or "flat-wedge" interposed between the brass and the top of the journal box to hold the brass in place and to place upon it the load that it is to impose upon the journal. The lower portion of the journal box comprises a reservoir for lubricant. This reservoir is conventionally packed with loose waste by means of which the lubricant is supplied to the journal.

It not infrequently happens that failures occur when bits of the packing material are carried by the journal beneath the bearing element or brass, a condition known as "waste grab," and from displaced packing. These conditions result in improper lubrication, increased friction and lead to so-called "hot boxes." It has been reported that some 125,000-130,000, or approximately 7% of the cars being operated by American railroads each year are put out of service because of "hot boxes," and of these it has been estimated that at least two thirds are caused by the deficiencies of loose waste packing. Further, loose waste has a short life and journal boxes packed with it require frequent reconditioning.

It is an object of the present invention to obviate the foregoing present practical difficulties through the provision of an improved journal lubricator which will replace waste packing yet permit of application to present equipment without modification thereof, which can be installed and removed through the access and inspection opening of conventional journal boxes without need for jacking and disassembly of the journal box, and by even unskilled personnel, and which satisfactorily performs in journal boxes equipped with conventional lids and dust seals.

A related object is to provide a journal lubricator which can accommodate the substantial lateral movement of the journal and bearing that is encountered during car operation without becoming dislocated.

A further object lies in the provision for retaining a substantial quantity of lubricant for continuous application to a journal and to do so with the first revolution of the journal even after a long period of car layover.

Still another object of the invention is to provide a lubricator constructed to perform the foregoing objects and in addition, one which permits of economical manufacture, is long-lived, and readily permits replacement of the part that is subject to wear and re-use of the remainder of the device so that total replacement is unnecessary.

The objects of the invention thus generally set forth

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are attained by the construction and arrangement shown by way of illustration in the accompanying drawings, in which:

Fig. 1 is a longitudinal vertical section through a conventional journal box with a lubricator embodying the features of the present invention shown being inserted therein, the lubricator and the journal being shown in side elevation.

Fig. 2 is a transverse vertical section and substantially in the plane indicated by line 2—2 in Fig. 1, but with the lubricator in place within the journal box.

Fig. 3 is a perspective view of the illustrative lubricator.

Fig. 4 is a horizontal section taken substantially in the plane of line 4—4 in Fig. 3.

While the invention is susceptible of various modifications and alternative constructions, there is herein illustrated and described in considerable detail a preferred embodiment. It is to be understood, however, that it is not intended to limit the invention to this specific embodiment. On the contrary, it is intended to cover all modifications and alternative constructions falling within the spirit and scope of the invention as expressed in the appended claims.

Referring more particularly to Figs. 1 and 2 of the drawings, there is shown a conventional railroad car journal box, bearing and journal assembly. The outer end or journal portion 10 of a wheel axle 11 is housed within a journal box 12, entering the same by way of an opening 14 which is formed in the inner end of the journal box and is fashioned with an annular well 15 for the reception of a dust-sealing element (not shown). The journal box 12 is specially formed, as at 16, for the accommodation of a frame member 17 of the car truck. Disposed within the top portion of the journal box 12 is a bearing assembly, generally designated 20, including a bearing element or brass 21, and a mounting shoe or flat-wedge 22. The latter is disposed between the brass and the top wall of the journal box. Its lower face and the upper face of the brass are complementally formed for mating engagement, and both the flat-wedge and the brass have grooves formed in their side walls for the reception of positioning lugs 23 that are rigid with the side walls of the journal box. It will be apparent that the load to be borne by the journal 10 is applied thereto from the truck frame member 17 by way of the top wall of the journal box 12, the flat-wedge 22, and the brass 21.

The lower part of the journal box 12 defines a reservoir, generally indicated 12A, for containing a quantity of liquid lubricant. The interior of the journal box 12 is accessible by way of an opening 26 in the outer end of the journal box to permit inspection and to permit the introduction of lubricant into the reservoir. A hinged lid 27 is provided which is conventionally spring-biased to normally close the opening 26.

It is contemplated that the lubricating device, generally designated as 30, and embodying the features of the present invention, be received in the reservoir 12A to convey lubricant therefrom and to apply it to the journal 10. The lubricator 30 comprises an applicator portion 30A and a carrier portion 30B. The former comprises means for retaining a supply of lubricant for application to the journal 10 by a woven fabric surface, and the latter comprises means for both conveying lubricant from reservoir 12A to the applicator means and for resiliently urging the same against the journal 10 uniformly throughout its length. It is of particular practical significance that the illustrative lubricator 30 is insertable as a unit into the journal box 12 beneath the journal 10 through the access opening 26. It is further contemplated

that the applicator means be readily separable from the remainder of the lubricating device so as both to facilitate withdrawal of the lubricator from the journal box 12 and replacement of the journal engaging or applicator portion of the lubricator as might become desirable as a result of wear after a long period of use.

As shown in the drawings, the means included in the applicator portion 30A of the device for retaining a quantity of lubricant and for applying it to the journal 10, includes a pad 31 formed of a woven wick fabric covering 32 and a pair of filler pieces 33. The latter are disposed in side-by-side relation and preferably the cover 32 is wrapped completely around them, being stitched or otherwise secured along the longitudinal marginal edges and centrally between the filler pieces 33, as indicated at 32a and 32b respectively. The pad 31, is mounted upon a retaining strip 34 which is also preferably formed of woven wick fabric.

In the illustrative lubricator, the means for conveying lubricant from the reservoir 12A and for resiliently urging the pad 31 against the journal 10 has been previously generally designated the carrier portion 30B. It includes a plurality of normally flat leaf springs 36 which are retained in spaced relation to each other in pockets 37 formed in a mounting element 38. The mounting element 38 is also fashioned of woven wick fabric, preferably having its edges selvaged or bound with bias tape to impart durability thereto. The pockets 37 are thus conveniently defined by spaced parallel rows of stitching 37a extending transversely of the mounting element 38.

To insure an even greater supply of lubricant from the reservoir 12A to the pad 31, the device can, if desired, be provided with auxiliary lubricant conveying means. For this purpose the illustrative lubricator 30 is equipped with auxiliary feeders 35. These feeders comprise strips of woven wick fabric affixed in spaced relation to each other to the underside of the pad retainer 34 and are adapted, when the lubricator is installed, to depend therefrom into the lubricant in the reservoir 12A.

The construction and arrangement of the lubricator 30 is such that the applicator portion 30A and the carrier portion 30B are assembled as a unit with the normally flat spring elements 36 flexed, and thus pre-stressed, so that when the lubricator is installed in the journal box, the pad 31 is resiliently urged against the journal 10. For this purpose, fastening means are provided adjacent the juxtaposed ends of the portions 30A and 30B, the elements of the fastening means that are carried by the applicator portion 30A being spaced more closely together transversely of the lubricator, than the cooperating fastener elements of the carrier portion 30B. As shown, spring-grip snap-button type fasteners 39 are employed; these fasteners have a female portion 39a equipped with an internal annular spring (not shown) for receiving and gripping a separable male portion 39b when inserted therein. In the exemplary device, the pad retainer strip 34 is extended beyond the side edges of the pad 31 to define depending lateral skirts 34a and 34b. Several fastening elements 39a are provided which are secured in spaced relation to each other along the lateral edges of the skirts 34a and 34b. The cooperating fastening elements 39b are provided on the carrier portion 30B of the device.

When the carrier portion 30B and the applicator portion 30A are held in assembled relation by the fasteners 39, the device is in condition for insertion and as a unit into the journal box 12. This is accomplished by initially pressing the longitudinal sides of the device together so as to reduce the overall width of the lubricator and to make it more generally conform to the space between the lower portion of the outer end of the journal 10 and the oppositely disposed inner surface of the journal box 12, and by pressing the inner end of the lubricator 30 down into the outer part of the lower or reservoir portion

12A of the journal box beneath the outer end of the journal 10. The flexibility of the fabric, the filler pieces 33, and of the spring elements 36 of which the lubricator is comprised, permits the device simply to be pushed into place in the reservoir 12A and beneath the journal 10. Once in place, the spring elements 36 of the carrier portion 30B resiliently urge the applicator portion 30A, and more particularly the pad 31, against the journal 10.

The pad 31 including its cover 32 and the filler pieces 33 should be thoroughly soaked with lubricant. This can be done prior to installation of the lubricator within the journal box 12, or an amount of lubricant in excess of that normally maintained in the journal box reservoir 12A can be supplied immediately after installation. Thereafter the lubricant supply is maintained by conduction of lubricant by the action of the wick fabric material of the mounting element 38 of the carrier portion 30B, of the retainer strip 34, and of the auxiliary feeders 35, the cover 32, and filler pieces 33 of the pad 31.

It is well known that considerable relative lateral movement between journals 10 and their bearing assemblies 20 occurs during braking, humping, switching, and the like of railroad cars. One of the features of the instant invention is that such movement of the journal is readily accommodated by the lubricator without interruption of the application of lubricant to the journal 10. Referring particularly to Fig. 2 of the drawings, it can be seen that when the lubricator 30 is in place in the journal box 12 beneath the journal 10, the upper portions of the sides of the lubricator diverge inwardly toward the journal 10 and away from the side walls of the journal box 12, thus leaving a space between the upper outer edge portions of the lubricator and the journal box walls. Lateral movement of the journal 10 with respect to the journal box 12 results in a downward and outward application of force upon the lubricator 30 in one direction or the other. The flexibility inherent in the lubricator constructed in accordance with the present invention allows the carrier 30B to be compressed on the side thereof receiving this force and to expand on the opposite side, this "rolling" movement being permitted by the spacing mentioned above. It can be said then that the lubricator "rides" with the displaced journal and it will be seen that the pad 31 of the applicator 30A is kept in contact with the journal 10 so that lubricant is continuously applied thereto.

To facilitate removal of the lubricator 30 from the journal box 12A, the present invention contemplates separation of the applicator portion 30A and the carrier portion 30B so that the springs 36 are released, the device is flattened, and the two portions can be independently withdrawn from the journal box 12. In carrying out this aspect of the invention, means accessible through the access opening 26 is provided for separating the elements 39a and 39b of the fasteners 39. To this end, the fastening elements 39b are mounted on straps 40, one strap being provided for each row of fasteners 39. One end of each strap 40 is fixed to the inner side of the carrier 30B, and the other end of each strap is fashioned as a loop 42 to receive a workman's fingers for pulling thereon. Access openings 41 are formed in the carrier 30, or more particularly, in the mounting element 38 between alternate ones of the leaf spring pockets 37, so that the fastening elements 39b can extend therethrough for engagement with the fastening elements 39a. These openings are appropriately located to correspond to the locations of the fastening elements 39a.

The fastening elements 39b are spaced along the strap 40 somewhat more widely than the fastening elements 39a are spaced along the skirts 34a and 34b. There is thus provided some slack in the straps between adjacent fastening elements 39b to facilitate connection of the fastening elements 39b with the fastening elements 39a and to prevent accidental separation of the fasteners. It will

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be apparent that when the looped ends 42 of the straps 40 are pulled toward the opposite sides of the journal box and outwardly thereof, the ends being accessible to a workman through the access opening 26 of the journal box 12, the fastening elements 39b are successively disengaged from the fastening elements 39a. When all of the fasteners have been separated, the two lubricator portions 30A and 30B are separated and the carrier springs 36 tend to return to their normal flat condition. Being no longer held in assembled relation, the two portions 30A and 30B can be pulled out of the reservoir 12A from beneath the journal 10 and withdrawn from the journal box 12 through the access opening 26. As an additional aid to the withdrawal of the device from the journal box, the illustrative device has been shown as equipped with pull loops 44 and 45. The loops 44 and 45 are respectively attached to the applicator portion 30A and to the carrier portion 30B centrally of the outer edges thereof. This location makes them readily accessible to be grasped by a workman servicing the journal box and when he pulls upon them, after release of the fasteners 39, the portions 30A and 30B of the lubricator 30 are smoothly and evenly withdrawn through the opening 26.

I claim as my invention:

1. For use in a conventional railroad car journal box housing an axle journal and bearing and defining a lubricant reservoir beneath the journal, a journal lubricator comprising, in combination, a pad adapted to be soaked with lubricant and having a woven fabric surface for engagement with the journal, said pad having a longitudinally disposed skirt along one side thereof, fastening elements disposed in a longitudinal row along said skirt, a flexible support adapted for reception within the lubricant reservoir of the journal box and including means for conveying lubricant by wick action from the reservoir to said pad, and including means for resiliently urging said pad against said journal, a strap secured at one end to the inner end of said support, and fastening elements carried by said strap for cooperation with said fastening elements on said skirt to retain said pad and support in assembled relation with said resilient means conditioned to urge said pad against the journal, said strap having its other end accessible through the conventional access opening of the journal box and when pulled disengaging said fastening elements and thereby releasing said pad and support so as to facilitate withdrawal thereof from the journal box.

2. For use in a conventional railroad car journal box housing an axle journal and bearing and defining a lubricant reservoir beneath the journal, a journal lubricator comprising, in combination, an applicator portion including a pad for holding a quantity of lubricant, said pad having a woven fabric surface for engagement with the journal to apply lubricant thereto, and including a retainer element mounting said pad, a carrier portion including resilient means and an element of wick material mounting said means and for conveying lubricant from the reservoir to said applicator portion, releasable fasteners interposed between said carrier and applicator portions for holding the same together in unitary assembled relation in which relation said resilient means is pre-stressed for urging said pad against the journal upon installation in a journal box, and means carried by one of said portions for releasing said fasteners whereby to facilitate withdrawal of the lubricator portions from the journal box.

3. For use in a conventional railroad car journal box housing an axle journal and bearing and defining a lubricant reservoir beneath the journal, a journal lubricator comprising, in combination, an applicator portion including a pad for holding a quantity of lubricant and applying it to the journal and including means mounting said pad for engagement with the journal, a carrier portion including a plurality of normally flat springs and including means formed of wick material mounting said

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springs in spaced relation to each other and for conveying lubricant from the reservoir to said applicator portion, and means interposed between said mounting means for fastening the same together to hold said portions in unitary assembled relation in which relation said springs are flexed for resiliently urging said pad into engagement with the journal when said lubricator is installed within a journal box.

4. For use in a conventional railroad car journal box housing an axle journal and bearing and defining a lubricant reservoir beneath the journal, a journal lubricator comprising, in combination, an applicator portion including a pad having a cover and a retainer both of woven wick fabric for holding a quantity of lubricant and for applying it to the journal, a carrier portion mounting said applicator portion for engagement of said pad with the journal, said carrier portion including means for resiliently urging said pad against the journal, and including a member of woven wick fabric mounting said means and conveying lubricant from the reservoir to said applicator portion, and lubricant feeders of woven wick fabric attached to and depending from said retainer for conveying additional lubricant to said retainer and thence to said pad.

5. For use in a conventional railroad car journal box housing an axle journal and bearing and defining a lubricant reservoir, a lubricator comprising, in combination, an applicator having a pad engageable with the journal for retaining a quantity of lubricant and having lubricant feed means attached thereto for conveying lubricant from the reservoir to said pad, and a carrier mounting said applicator and adapted to be received in the reservoir, said carrier including a member of woven wick fabric fastened to said applicator for conveying lubricant from the reservoir to said applicator pad and further including means for resiliently urging the pad against the journal, said feed means depending from said applicator within said carrier, said resilient means consisting of normally flat spring elements, and said member having spaced pockets therein which said spring elements are received.

6. For use in a railroad car journal box housing an axle journal and bearing and defining a lubricant reservoir beneath the journal, a journal lubricator comprising, in combination, a pad for retaining a quantity of lubricant and having a woven fabric surface for engagement with the journal to apply lubricant thereto, and a carrier mounting said pad and including a member of woven wick fabric for conveying lubricant from the reservoir to said pad and including spring means carried by said member for resiliently urging said pad against the journal, and a plurality of releasable fasteners interposed between said pad and said member for holding said pad and said carrier in unitary relation for installation in the journal box, said fasteners when released permitting independent withdrawal of said pad and said carrier from the journal box.

7. For use in a railroad car journal box housing an axle journal and defining a lubricant reservoir beneath the journal, a journal lubricator comprising, in combination, a pad for retaining a quantity of lubricant and having a woven fabric surface engageable with the journal for applying the lubricant thereto, and a carrier releasably mounting said pad and including means for resiliently urging said pad against the journal and further including a member of wick fabric for mounting said means and for conveying lubricant to said pad from the reservoir, and means for releasably fastening said pad and said member together with said resilient means pre-stressed, said pad and carrier being transversely and longitudinally yieldable for installation as a unit in the journal box through the conventional access opening thereof, and said pad and said carrier being independent-

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ly removable from the journal box upon release of said fastening means.

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