

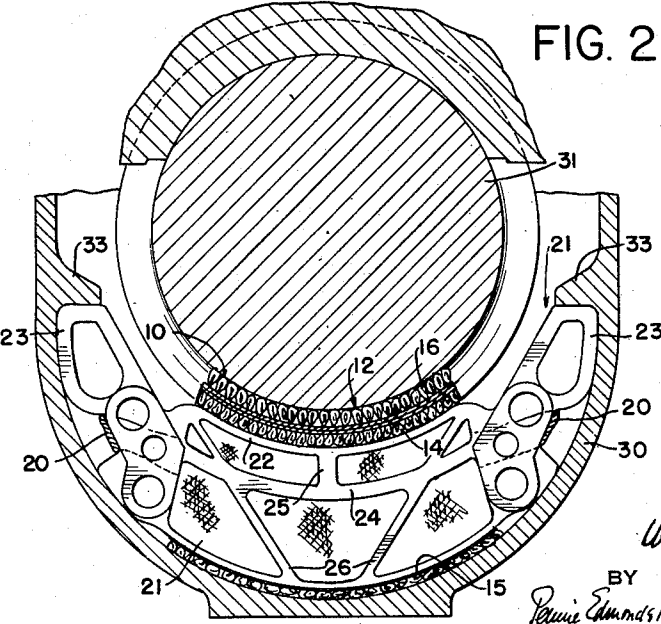
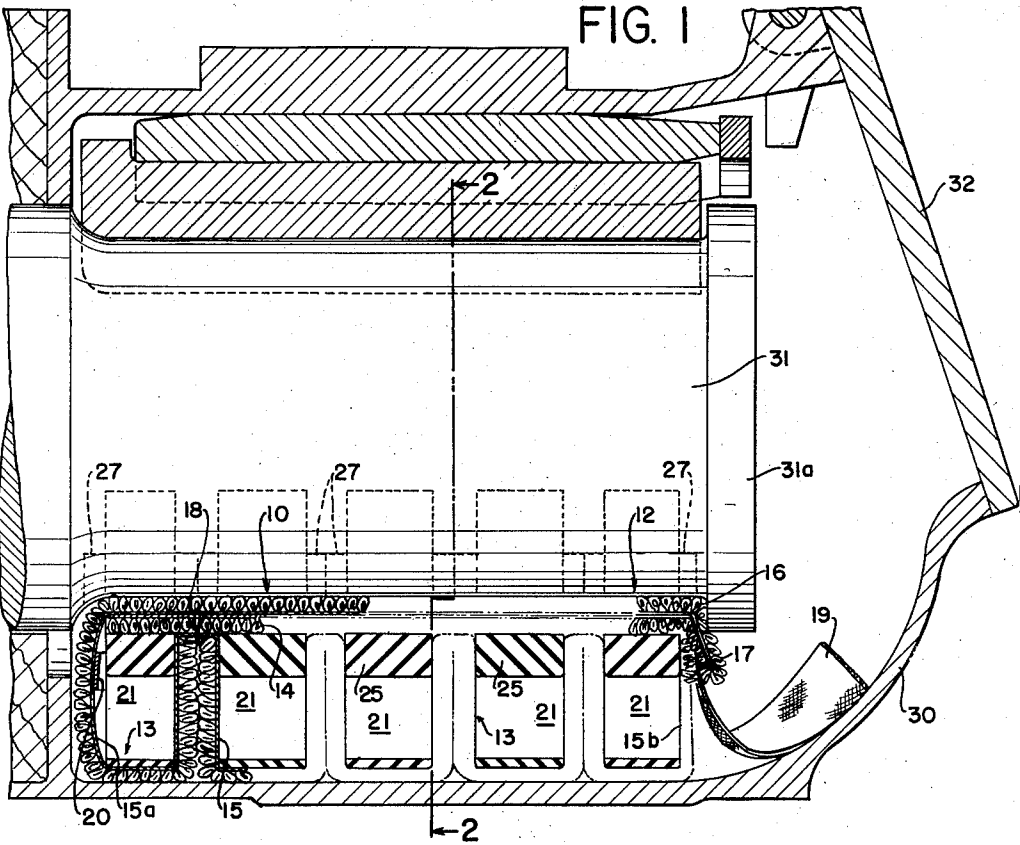
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JOURNAL LUBRICATORS

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3 Sheets-Sheet 1



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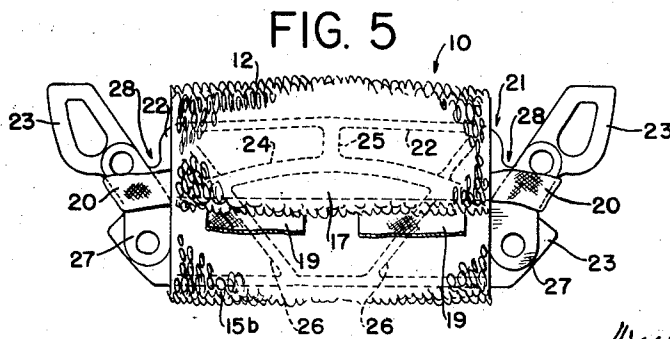
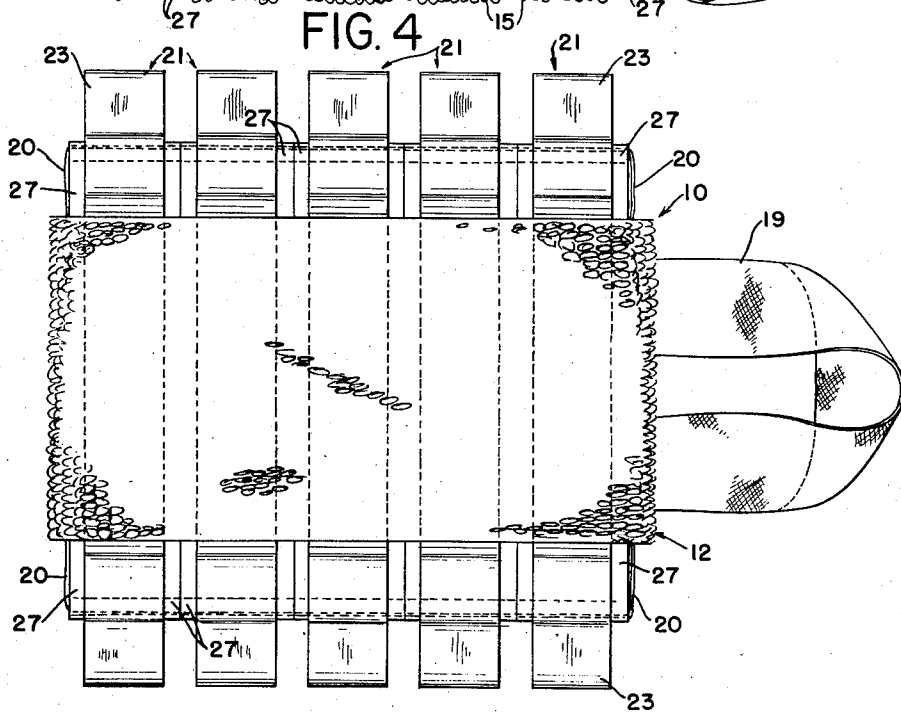
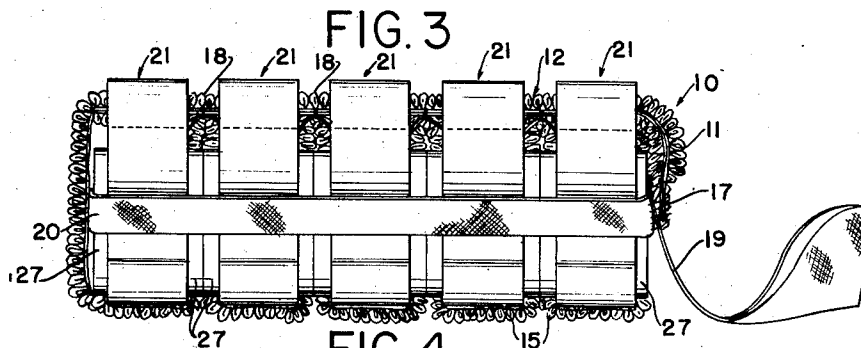
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FIG. 6

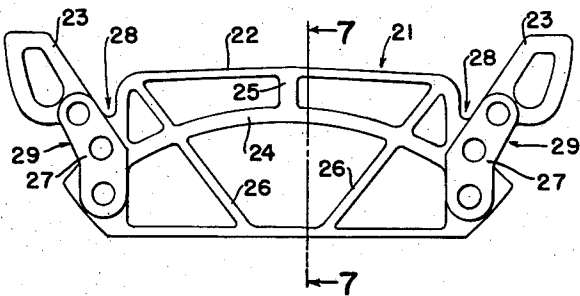


FIG. 7

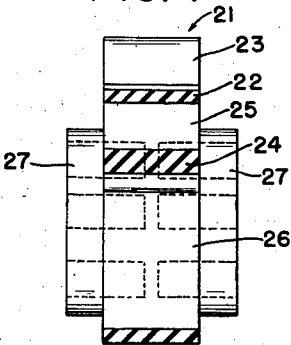


FIG. 8

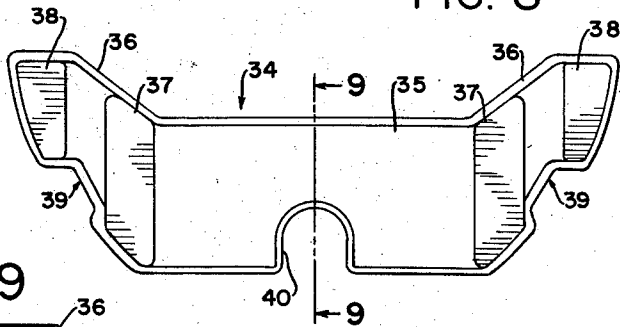
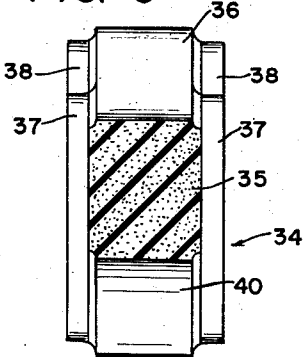


FIG. 9



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2,859,074

## JOURNAL LUBRICATORS

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19 Claims. (Cl. 308—88)

This invention relates to the lubrication of the journals of the axles of railway vehicles and is concerned more particularly with a novel lubricator for installation in the journal box of a railway car, which is made wholly of non-metallic parts and so constructed that, during its use, the conditions giving rise to hot boxes and overheated journals are not likely to occur. The new lubricator supplies oil efficiently to the journal over a long period and it may be easily inserted into and removed from the journal box. Also, a single form of the lubricator may be used in boxes varying both in size and in the clearance between the lower side of the journal and the bottom of the box.

The lubricator includes a fibrous jacket having a pad section, which bears against the journal, and a plurality of wick sections, which are formed to provide recesses or pockets receiving resilient filler units. The jacket may advantageously be made of a textile fabric having a rough or knobby surface, so that it may engage the journal on small spaced areas, while surrounding areas are spaced from the journal and provide cavities for dirt to collect in. The filler units are formed of resilient material, such as synthetic rubber, and they bear against the sides of the box and hold the pad section against the surface of the journal, while the wick sections surrounding the fillers have portions within the body of oil at the bottom of the box. The fillers extend transversely of the jacket, so that the lubricator may be easily flexed to facilitate its insertion in the box beneath the journal, and the fillers are easily removable from and replaceable in the jacket pockets, so that, if the jacket of a lubricator becomes unserviceable for any reason, the lubricator may be restored by using its fillers in a new jacket.

For a better understanding of the invention, reference may be made to the accompanying drawings, in which

Fig. 1 is a vertical sectional view through a journal box, in which one form of the new lubricator is installed.

Fig. 2 is a vertical cross-sectional view on the line 2—2 of Fig. 1;

Fig. 3 is a view in side elevation of the lubricator;

Fig. 4 is a top plan view of the lubricator;

Fig. 5 is an elevational view of the right hand end of the lubricator shown in Figs. 3 and 4 with part of the handle cut away;

Fig. 6 is a view in front elevation of one form of filler for use in the lubricator;

Fig. 7 is a sectional view on the line 7—7 of Fig. 6;

Fig. 8 is a view in front elevation of another form of filler; and

Fig. 9 is a sectional view on the line 9—9 of Fig. 8.

The new lubricator in the form shown in Figs. 3 to 5 comprises a jacket 10, which is formed of fibrous material and is preferably made of a pile fabric having a pile made of loops. A fabric produced on a multi-needle tufting machine is suitable for the purpose and the backing sheet of the fabric and the pile yarns may be of cotton. The jacket is formed to provide a pad 12,

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in which the pile loops are exposed and, beneath the pad, the jacket has a plurality of open-ended pockets 13 for receiving resilient fillers, which serve to maintain the pad against the surface of the journal. A suitable construction for the jacket involves the use of a single strip of pile material, which has an end section 14 extending the full length of the pad to form the inner layer thereof. Beyond the section 14, the strip is folded to form a series of loops 15 defining the pockets and, beyond the top of the outer side wall of the last loop 15a, the strip is folded to overlie the section 14 and form the outer layer 16 of the pad. At the end of the layer 16 remote from the loop 15a, the strip has a downwardly extending end section 17. The parts of the jacket are secured together by rows of stitching 18, which pass through the fabric and through the layers 14 and 16 between adjacent loops.

The lubricator is provided with a handle and, for this purpose, the ends of a loop of a fabric strap 19 are inserted between the end portion 17 of the fabric strip and the adjacent outer wall of the end loop 15b and secured in place by stitching. The jacket is also provided with a fabric strap 20, which is used to encircle fillers inserted in the pockets, and the strap 20 has its ends stitched to the end section 17 of the strip and the handle strap 19 and is secured to the inner surface of the loop 15a of the strip at the other end of the group of fillers.

A resilient filler is inserted in each of the pockets of the lubricator jacket and projects out of the pocket at both ends. The fillers may take different forms and the filler 21 shown in Fig. 5 is made of rubber and is molded to provide a mid-section 22 and end sections 23, which are attached to the ends of the mid-section and extend upwardly and outwardly therefrom. Preferably, the mid-section has the form of an open frame with a strip 24 of arch shape, which extends between the ends of the frame and is connected to the top bar by a strip 25. The curved strip 24 is supported by a pair of inclined members 26, which extend divergently upwardly from the bottom bar of the frame to the top corners of the mid-section 22.

The end sections of the filler have lateral projections 27, which extend to opposite sides and project beyond the mid-section 22. Each projection is of a height approximately equal to the thickness of the jacket fabric and the distance between projections on opposite sides of the filler is about equal to the width of the jacket. The inner ends of the end sections are of less height than the end members of the mid-section, so that transverse recesses 28 opening upwardly are formed between the end of the mid-section of the filler and each end section. The end sections are also formed with transverse recesses 29 for reception of the side strap 20.

In assembling the lubricator, a filler is inserted in each pocket of the jacket and is centered, so that its end sections extend out equal distances beyond the ends of the pocket, after which the strap 20 is looped around the group of fillers and inserted in the recesses 29 thereof. When the fillers are in place, the projections on adjacent fillers lie in contact as illustrated in Fig. 3, and the sides of a pair of adjacent jacket loops lie between the contacting pairs of projections on adjacent fillers. The projections thus space the fillers, so that the portions of the pile fabric jacket between them may not be subjected to pressure and the projections also keep the end sections of adjacent fillers apart so as to provide vertical passages between them. As the fillers extend transversely of the jacket, the lubricator may be easily bent along transverse lines lying between adjacent fillers.

When the lubricator is to be installed in a journal

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box 30 beneath the journal 31, the cover 32 of the box is raised and the end of the lubricator opposite that with the handle is inserted into the box and the lubricator is passed beneath the outer collar 31a on the journal and the bottom of the box. Since the lubricator may be bent along lines lying between the pockets and the fillers are of resilient material, it is relatively easy to deform the fillers successively and cause them to pass beneath the collar 31a as the lubricator is moved into position. In the installation of the lubricator, the end sections 23 of the fillers are moved beneath the horizontal lugs 33 formed on the inner surface of the box and, when the lubricator is in position as described, the mid-section 22 of each filler is bent by contact with the journal to upwardly concave form. Thereafter, upon wear of the journal, the lubricator will tend to assume its normal undistorted shape and will continue to maintain good contact with the journal. Also, the movement of the lubricator towards a normal horizontal and undistorted position causes the end sections of the fillers to be forced outwardly against the inner surface of the box regardless of the clearance between the bottom of the box and the journal and the bottom of the loops of the jacket then lie close to the bottom of the box and within the body of oil therein.

In the use of the lubricator, the oil in the bottom of the journal box is carried up through the loops acting as wicks and the pad is continually saturated with oil. Since the pad is formed of material having a loop pile, the pad makes contact with the journal surface on spaced areas at the ends of the loops and each such contact area is surrounded by areas, in which the pile surface is spaced from the journal, so that cavities, in which dirt may collect, are provided in the surface of the pad. If the dirt were not free to enter the cavities and remained on the surface of the pad in contact with the journal, the pad surface would soon become glazed and it would be impossible for oil to pass through the glazed coating to the journal.

In the construction shown in Figs. 1 and 2, the lubricator is of such size in relation to the space between the journal and the bottom of the box that the pad of the lubricator jacket is in contact with the under side of the journal and, at the same time, the bottoms of the loops lie against the bottom of the journal box. While this is the ideal condition, journal boxes vary in dimensions as manufactured and journals change in diameter as a result of wear, so that the space between the bottom of a journal and the bottom of the box may vary. When the space between the journal and the bottom of the box is relatively small, the downward distortion of the mid-sections of the fillers by contact with the journal is relatively large, but the fillers are sufficiently yieldable, so that they may undergo such distortion without damage. When the space between the journal and the bottom of the journal box is larger or increases, the mid-sections of the fillers are less distorted, but there is always sufficient distortion of the fillers to cause them to maintain the pad against the journal surface at all times. The fillers described have a long vertical travel, so that they can maintain the pad against the journal regardless of the distance between the journal and the bottom of the journal box in normal service and the fillers press the pad against the journal lightly so that undue heating does not develop.

In operation, oil raised by capillary action through the wick sections to the pad is applied to the surface of the journal and oil thrown from the journal and landing on top of the end sections of the fillers may pass down into the bottom of the box through the spaces between the fillers maintained by projections 27. The mid-section of each filler is of open frame construction, so that the oil in the bottom of the box may pass freely through the fillers.

When it becomes necessary to remove the lubricator,

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it can be easily pulled out from beneath the journal by the handle 19 and the fillers can then be quickly slipped out of the pockets after the strap 20 encircling them has been removed. While the jacket may require replacement from time to time, the fillers are of indefinite life and may be used in different jackets, as desired.

The filler 34 shown in Fig. 8 is formed of sponge rubber and it includes a mid-section 35 and end sections 36 extending upwardly and outwardly from the ends of the mid-section. The end sections are formed with lateral projections 37, 38, which serve to space adjacent fillers when the lubricator is installed in the lubricator jacket, and the end sections are also provided with transverse recesses 39 for receiving an encircling strap similar to the strap 20. At the bottom, the mid-section is formed with a recess 40 providing a passage for oil in the bottom of the box. The fillers 34 function in the same manner as fillers 21 and serve to hold the pad of the jacket in contact with the journal.

In all forms of the lubricator, it is important that the fillers be of such construction and material that they will not take a permanent set, since, if this occurs, the fillers will not maintain the pad in contact with the journal throughout the range of normal variation of the distance between the journal and the bottom of the box.

I claim:

1. A journal lubricator, which comprises a jacket of fibrous material having a pad at its top adapted to extend lengthwise of the journal and to engage the lower surface thereof and a plurality of wick sections extending downward from the pad and defining pockets extending transversely of the axis of the journal when the pad is inserted in the box and open at both ends, and a filler of resilient material having a mid-section within each pocket and end sections projecting out of the ends thereof, the projecting end sections being adapted to contact the side walls of a journal box.

2. The journal lubricator of claim 1, in which a strap is attached to the jacket and encircles the fillers with the strap engaging the outer surfaces of the end sections of the fillers.

3. The journal lubricator of claim 1, in which a flexible handle is attached to the jacket at one end.

4. The journal lubricator of claim 1, in which one end of the pad extends down along the outer wall of the adjacent pocket, one end of a flexible handle and part of a strap encircling the fillers lie between the end of the pad and the wall of the pocket, and the ends of the pad and the handle and the part of the strap are secured to the pocket wall.

5. The journal lubricator of claim 1, in which the end sections on the fillers have lateral projections and opposed projections on fillers in adjacent pockets are in contact.

6. The journal lubricator of claim 5, in which the projections lie near the junctions of the end sections of the fillers with the mid-section.

7. The journal lubricator of claim 1, in which each filler has a mid-section of substantially uniform height and end sections extending outwardly and upwardly from the ends of the mid-section.

8. The journal lubricator of claim 7, in which each end section of a filler has an end surface outwardly and upwardly and inclined from the bottom surface of the mid-section and formed with a transverse recess for receiving a strap.

9. The journal lubricator of claim 7, having a recess between each end section of a filler and the adjacent end of the mid-section of the filler.

10. The journal lubricator of claim 1, in which the fillers are made of relatively hard rubber.

11. The journal lubricator of claim 1, in which the jacket is made of a textile fabric having a rough, knobby surface.

12. The journal lubricator of claim 11, in which the jacket is made of a pile fabric and the pile elements in the pad are exposed.

13. The journal lubricator of claim 5, in which said end sections on the fillers have portions extending outwardly beyond said lateral projections, providing open spaces between said portions of adjacent fillers.

14. The journal lubricator of claim 1, having means holding the fillers in assembled relation.

15. The journal lubricator of claim 1, having means engaging the outer lateral sides of the end fillers and holding the fillers in assembled relation.

16. The journal lubricator of claim 1, in which the wick sections are separately formed loops.

17. The journal lubricator of claim 1, in which the wick sections are separately formed loops movable relative to one another.

18. The journal lubricator of claim 17, in which adjacent loops are connected together at their upper edges.

19. A journal lubricating means comprising a journal box, a journal of an axle of a railway vehicle extending into said journal box, lugs extending inwardly from the sides of the journal box, a resilient lubricator in said journal box, said lubricator including a jacket of fibrous material having a part at its top extending lengthwise of the journal and engaging the lower surface thereof, a plurality of wick sections extending downwardly from the part and defining open-ended pockets extending

transversely of the axis of the journal and a filler of resilient material having a mid-section within each pocket and end sections projecting out of the ends of the pockets, the center portion of said lubricator engaging the lower side of the journal and the projecting end sections of the fillers engaging the inner sides of the journal box and the lower side of said inwardly extending lugs, said lubricator being held in said journal box in a distorted state in which the central portion beneath the journal is distorted downwardly by the journal and the side portions engaging the walls of the journal box are distorted inwardly and thereby exert an outward force against the side walls of the journal box, tending to hold the lubricator in its relative position with respect to the journal, whereby upon wear of the upper surface of the lubricator in engagement with the journal, the central portion, in tending to assume its normal undistorted position, will move upwardly and maintain its contact with the journal and will exert an outward force on the end portions forcing them more firmly into engagement with the side walls of the journal box.

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