

May 21, 1963

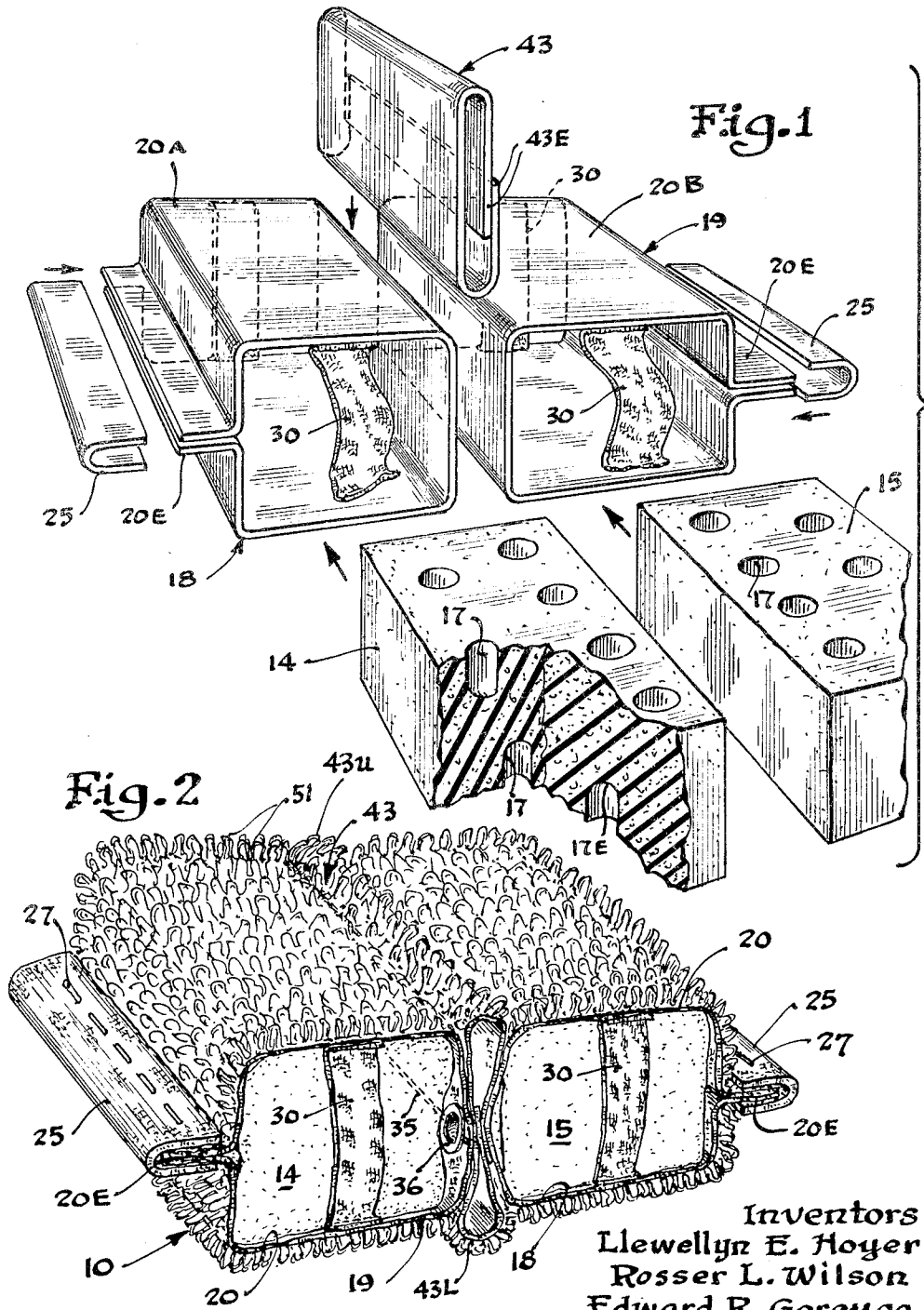
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3,090,658

JOURNAL LUBRICATOR FOR RAILROAD CARS

Filed June 26, 1958

4 Sheets-Sheet 1



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4 Sheets-Sheet 2

Fig. 3

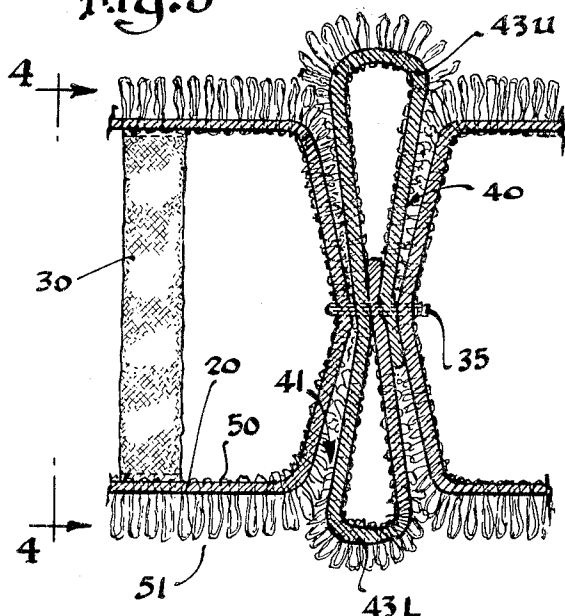


Fig. 4

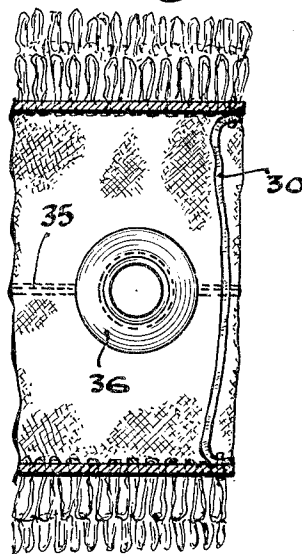
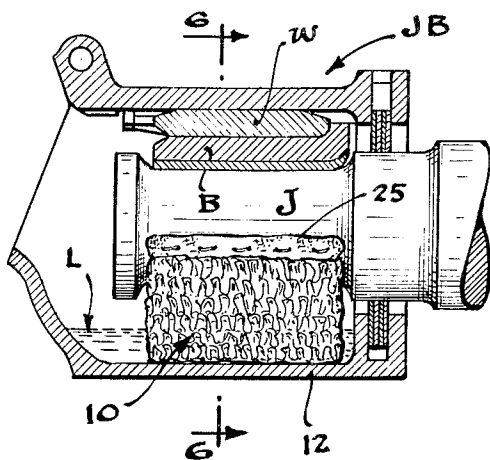


Fig. 5



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Fig. 6

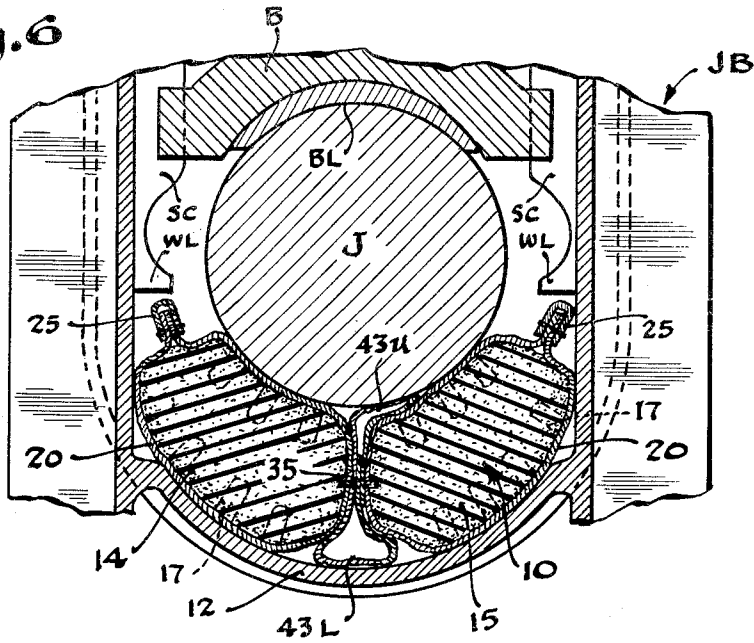
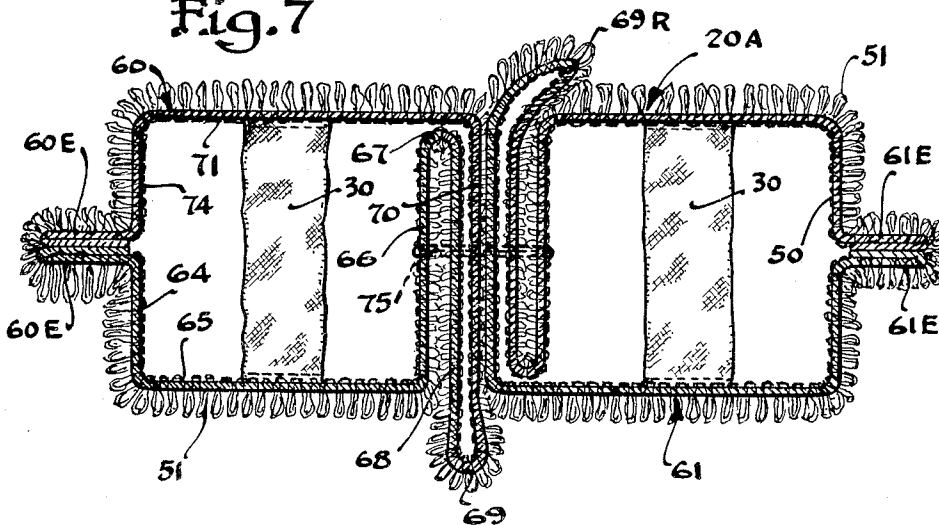


Fig. 7



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4 Sheets-Sheet 4

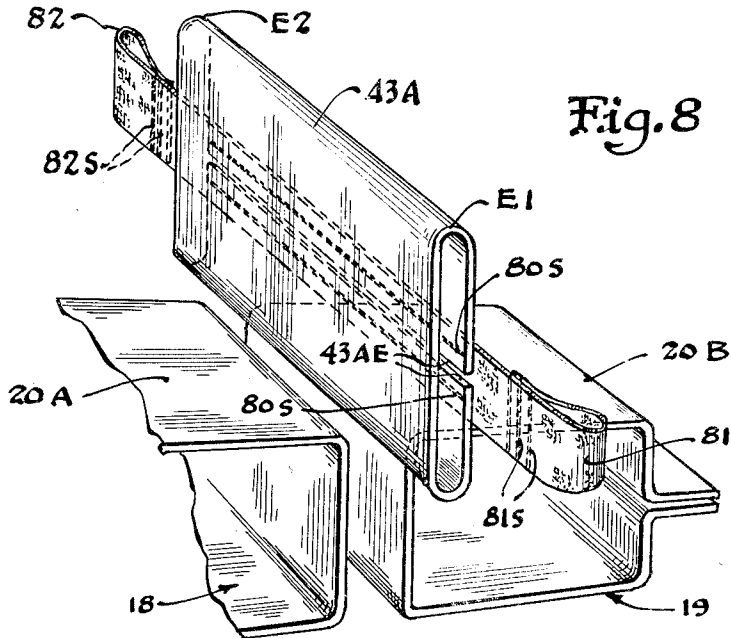


Fig. 8

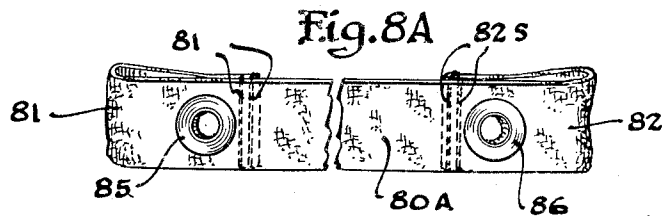


Fig. 8A

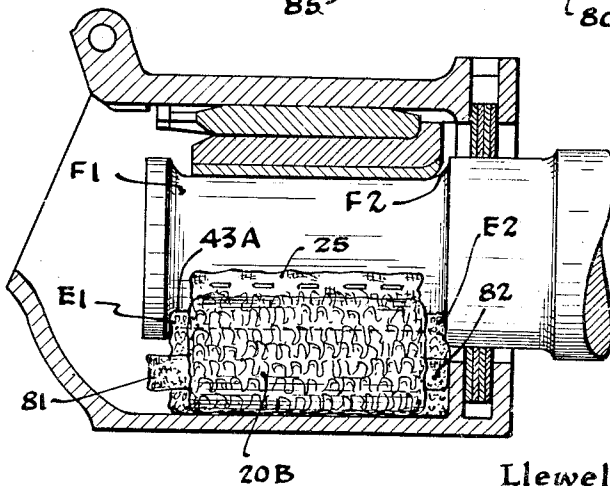


Fig. 9

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5 Claims. (Cl. 308-243)

This invention relates to a lubricator for the journal 10
and bearing of a railroad car.

The long-practiced mode of lubricating the segmental
bearing in a railroad car truck has been by way of so-
called waste packing, but it is now an accepted under-
standing that waste packing does not produce reliable
lubrication at high speeds of the railroad car and has
contributed to hot box problems. Proposals have been
made to supplant waste packing as a lubricator by having
resort to various forms of unitary pad inserts of oil
absorbent material adapted to be arranged between the
lower periphery of the car journal and the oil reservoir
afforded by the underslung lower wall of the journal box.
Pads of this kind have heretofore been constructed in one-
piece form and in multiple pad form, and in most in-
stances substantially better operation is obtained in com-
parison to the historical mode of waste packing. Thus,
the pad type of lubricator has reduced the likelihood of
loose strands of textile material from being drawn up-
wardly by the journal where they are trapped between the
bearing and eventually ignite due to being wiped dry,
and additionally much more effective relay of lubricant to
the journal has been realized in comparison to the pre-
vious standard practice of waste packing lubrication.

The present invention is concerned with a multiple pad
lubricator of the foregoing generalized construction, and
one of the primary objects of the present invention is to
enable a flexibly integrated two-pad lubricator to be used
under circumstances where there is an effective relay of
lubricant to substantially the entire lower half of the car
journal in spite of some separation between the pads in
achieving the desired flexibility for ready conformability
to the arcuate shape of the journal.

Another object of the present invention is to so construct
a lubricator achieving the foregoing object while account-
ing for effectively maintaining the lubricator against shift-
ing to the extent that one or the other pad section might
be rotated by the journal upward against the bottom of
the bearing.

Specifically, it is an object of the present invention to
dispose a pair of resilient inserts of oil resistant material
respectively in two closed loop, open-ended sleeves affor-
ded by a fabric casing of wicking material. These two
sleeves are to be joined in a restricted area at adjacent in-
ner sides to produce a highly flexibly or articulated con-
nection accounting for ready conformability to the journal.
Thus, as a result of the particular joining to be described
hereinafter, there results between the two sleeves upward-
ly and downwardly opening V-channels. These channel
shaped voids are to be filled by a separate filler of wick-
ing material having loose loops disposed in the channels,
and these two loops respectively constitute wicks disposed
at the medial center line of the bottom of the journal box
and at the nadir point of the journal between the two
sleeves, thereby establishing a high wicking rate at the
flexible center of the lubricator where normally there
would be voids tending to reduce the transfer of lubricant
to the journal at this vertical line. The outer vertical sides
of the fabric casing are drawn together in such a manner
as to define end flaps, and these end flaps are reinforced by
heavy cotton duck material to constitute stiffened end
sections on the lubricator which will engage abutments

within the journal box to maintain the lubricator in the
desired position within limits and insure against undesired
shifting of the lubricator within the journal box.

Other and further objects of the present invention will
be apparent from the following description and claims and
are illustrated in the accompanying drawings which, by
way of illustration, show preferred embodiments of the
present invention and the principles thereof and what is
now considered to be the best mode contemplated for
applying these principles. Other embodiments of the
invention embodying the same or equivalent principles
may be used and structural changes may be made as de-
sired by those skilled in the art without departing from
the present invention and the purview of the appended
15 claims.

In the drawings:

FIG. 1 is an exploded schematic perspective of an as-
sembly of parts embodied in a lubricator of the present
invention;

FIG. 2 is a perspective view of an assembled lubricator;

FIG. 3 is a fragmentary side view of the medial section
of the lubricator shown in FIG. 2 but with the inserts
removed;

FIG. 4 is a sectional view taken at 4-4 of FIG. 3;

FIG. 5 is a sectional view of a railroad journal box con-
taining a lubricator of the present invention;

FIG. 6 is an enlarged sectional view taken at 6-6 of
FIG. 5;

FIG. 7 is an end view of a modified lubricator;

FIG. 8 is a view similar to FIG. 1 but showing modi-
fications;

FIG. 8A is a view showing a modified form of pull
strap; and

FIG. 9 is a view similar to FIG. 5 but showing a modi-
fied form of lubricator in the journal box.

One form of the present invention is illustrated in
FIG. 2 of the drawings as embodied in a lubricator 10
which, as shown in FIGS. 5 and 6, is to be removably
mounted in the journal box JB of a railroad car in posi-
tion between the lower periphery of the car journal and
the bottom wall 12 of the journal box. The construction
shown in FIGS. 5 and 6, insofar as the journal box is con-
cerned, represents standard AAR construction, and it will
be noted that the journal J engages a conventional seg-
mental bearing B which is held in position at the top of
the box by a conventional wedge W. The bottom wall
12 of the journal box, being spaced well below the
journal J, affords a reservoir for lubricating oil L, and
the lubricator 10 being positioned therein will relay large
quantities of the lubricating oil onto the journal J which
in turn will carry oil to the lining BL, FIG. 6, of the bear-
ing B.

The lubricator 10 in the present instance is a two-pad
construction and includes a pair of block shaped inserts
14 and 15 of identical construction, dimension and con-
figuration so that the blocks 14 and 15 are interchangeable
and reversible. Each of the blocks 14 and 15 consists of
porous, resilient, oil resistant material such as foam neo-
prene or the like. These blocks are therefore highly com-
pressible, and enlarged openings or passages 17 are
formed in the opposite upper and lower faces thereof so
as to extend but part way through the body of the pad
thereby having dead ends 17E within the body of the pad
which by definition are spaced from the opposite face of
the block or pad-type inserts. The minute pore openings
in the body of the pad are virtually of capillary dimension
and interconnected one with the other as is well known
in porous constructions of this kind. Thus, the pore open-
ings are of materially reduced dimension in comparison
to the enlarged openings 17, so that when the blocks are
placed under compression due to up and down movements

of the journal J compressing the lubricator 10, oil trapped within the openings 17 which open at the bottom of the blocks 14 and 15 adjacent the bottom wall 12 of the journal box is placed under compression. The trapped oil so compressed is forced upwardly through the porous body area of the inserts to emit as jet sprays from the upper faces thereof, and this accounts for an increased pressurized relay of oil to the fabric casing surrounding the blocks 14 and 15. Thus, the ordinary manner of lubrication in the present instance is by capillarity, but under the circumstance described immediately above there will actually be pressure lubrication achieved without any mechanical parts.

The blocks 14 and 15 are rectangular on all sides and are to be arranged within respective confining pockets afforded by a pair of closed loop sleeves 18 and 19, FIG. 1, and these sleeves are formed from a fabric casing of wicking material so that the lubricant absorbed in the blocks 14 and 15 will soak by transfer capillarity into the sleeves in which the blocks 14 and 15 are confined. Additionally, the fabric casing is provided with a pile surface as will be explained.

Thus, referring to FIGS. 1 and 2, the porous blocks 14 and 15 are surrounded on their upper and lower faces and their side faces by a fabric casing 20 of light weight cotton duck material or the like. This casing 20 is constructed from two like pieces of duck material 20A and 20B, FIG. 1, initially of rectangular form. Each wicking piece 20A and 20B, in constructing the lubricator, is folded in bight form with the free ends 20E lapped one over the other at what will constitute the remote longitudinal outer sides of the casing. The end flaps thus afforded are preferably encased in looped pieces of heavy duck 25 folded in U-form and telescoped over the lapped ends 20E of the fabric casing 20 at the two outer sides. It should be explained in this connection that the chenille-type pile loops to be referred to hereinafter are not illustrated in FIG. 1, but this loop pile surface will be present on the fabric pieces 20A and 20B when the duck stiffeners 25 are applied to the lapped ends 20E, and hence the stiffeners 25 will overlap and confine the pile loops present on the end flaps 20E as will be recognized from FIG. 2.

In securing the stiffeners 25 in place, this is preferably accomplished by stitching as indicated at 27 in FIG. 2, but when it is expected that less severe circumstances will be encountered in the field, staples can be used. It will be recognized that heavy canvas duck is chosen for the stiffeners 25 primarily because of availability, low cost and ease in stitching. These serve as limit stops as will be explained, and also confine the pile loops present on the end flaps 20E, and hence numerous equivalents can be relied upon.

It will be recognized that the foregoing open-ended sleeve construction affords elongated pockets as shown in FIG. 1 when the sleeves 18 and 19 afforded by the fabric pieces 20A and 20B are opened. The sleeves are so dimensioned as to easily receive the porous block inserts 14 and 15, and of course the sleeves have opposed substantially parallel top and bottom sides corresponding in length and width to the top and bottom faces of the blocks 14 and 15, and have opposed substantially parallel side faces corresponding in height and length to the corresponding dimensions of the side walls of the blocks 14 and 15. Hence, when the blocks 14 and 15 are inserted into the open ends of the sleeves, there will be good contact between the porous block inserts and the wicking material of which the fabric casing is composed.

In maintaining the blocks 14 and 15 in place, narrow webs 30 of light-weight duck are secured to the open ends of the casing sleeves being stitched at the upper and lower ends thereof to the inside surfaces of the upper and lower faces of the sleeves in which the inserts 14 and 15 are disposed. Such stitching of the retainer webs 30 is of course completed once the inserts 14 and 15 have been arranged in place, at least in respect to the webs 30 at the

open ends of the sleeves into which the inserts 14 and 15 are first passed.

The adjacent inner sides of the sleeves are to be joined along a restricted longitudinal medial line to thereby flexibly join the two sleeves to allow for ready conformability of the lubricator to the dimensions of the journal as shown in FIG. 6. This joining is accomplished by stitching together the adjacent inner sides of the two sleeves as indicated at 35 in FIGS. 3 and 4. Additionally, brass grommets 36 are crimped in place at the fore and aft ends of the inner sides of the sleeves as shown in FIGS. 2 and 4. In addition to reinforcing the stitching 35, these grommets constitute hook receiving elements whereby a substantial force can be applied to the lubricator by a conventional packing hook incidental to positioning the lubricator within the journal box or withdrawing the same from the journal box. By so resorting to metallic grommets, there is little likelihood that the packing hook will produce tearing or distortion of the fabric casing.

As will be readily recognized from FIG. 3, upwardly and downwardly opening V-channels 40 and 41 are produced between the adjacent inner sides of the sleeves respectively above and below the securement as 35 which joins the two sleeves at their adjacent inner sides. In accordance with the present invention the V-channels 40 and 41 are filled with an auxiliary or filler wick 43, FIGS. 1, 2 and 3. This filler wick is of light weight duck wicking material, and in the form of the invention shown in FIGS. 1, 2 and 3, is separately constructed. Thus, the filler wick 43 is made from a single piece of cotton duck wicking material which is so folded as to have the free ends 43E, FIG. 1, lapped one over the other. This filler wick is arranged between the adjacent inner sides of the sleeves before the latter are joined by the stitching 35. Hence, the filler wick is stitched in place as an incident to the joining of the two sleeves, and preferably the lapped ends 43E of the filler wick are stitched together as a preliminary step.

The resultant construction is one wherein the filler wick affords an upper loose closed loop 43U disposed in the upwardly opening V-channel 40, and a like loose closed loop 43L disposed in the lower or downwardly opening V-channel 41. Hence, and as shown in detail in FIG. 6, the lower loop 43L of the filler wick will be located at the longitudinal center line of the bottom wall of the journal box where the oil will be at its greatest depth. Furthermore, the upper loop 43U of the auxiliary filler wick will fill the void of the upper V-channel 40 in the area between the sleeves on the vertical center line of the journal. The net result of this is rapid wicking of oil on to the nadir point of the journal immediately from oil at the greatest depth in the journal box, and this is particularly so in view of the fact that at this vertical line between the low point of the journal box and the low point of the journal, there are in effect four plies of wicking material, these of course being the summation of the adjacent inner sides of the two sleeves 18 and 19 and the two sides of the separable wick insert 43.

In order to further promote and enlarge the capacity of the lubricator, the fabric sleeves composing the fabric casing 20 are separately woven with cotton loops defining an exceedingly thick and fluffy pile surface on exposed surfaces of the sleeves. This pile surface is afforded by conventional chenille weaving simply by looping the chenille threads back and forth so that the chenille loops 50 are relatively taut within the fabric casing or cover 20 with the outer or exposed loops 51, FIG. 3, in an elongated loose state.

When the lubricator 10 is properly positioned in the journal box as shown in FIGS. 5 and 6, the heavily matted pile loops 51 on the lower faces of the fabric sleeves are for the most part submerged in oil in the bottom of the journal box, and since the pile surface is continuous with respect to individual chenille threads, each such thread is effective as an individual wick where-

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by the lubricating oil is transferred by direct capillarity to the exposed chenille loops 51 on the upper faces of the fabric sleeves. Of course the fabric casing, aside from the chenille loops, is a wick per se.

The lubricator 10 will tend to pick up to some extent the motion of the journal when the latter is rotating, and hence move slightly toward one side or the other of the journal box depending on the direction of rotation of the journal. However, the stiffened or reinforced end flaps at the two outer sides of the lubricator will engage one or the other waste retainer lug WL or stop column SC, FIG. 6, of the journal box thereby limiting the extent of lateral shift of the lubricator and preventing any entrapment thereof between the journal and the bearing B. It should also be pointed out in this connection that the stiffeners or retainers 25 effectively shroud the loop piles that are present on the end flaps 20E of the fabric sleeves, and it has been found that particularly in cold weather such shrouding prevents the loose chenille loops at the end flaps from being drawn upwardly or downwardly by the journal.

A modification of the present invention is illustrated in FIG. 7 having to do with a modified form of fabric casing 20A which affords the sleeves. In this particular form of the invention, the filler wick is constructed from the fabric casing, and the stiffening of the outer sides of the fabric casing to afford the retainers mentioned above is omitted. Thus, as shown in FIG. 7, a pair of individual fabric pieces of rectangular shape, similar to those described above and dimensioned in the same manner and embodying chenille loop threads, are folded so as to have the free ends 60E and 61E thereof lapped. These lapped ends are stitched together to complete closure of respective sleeves 60 and 61 open at both ends, and retainer webs 30 of the kind described above are associated therewith and completely stitched in place after the porous insert blocks (not shown in FIG. 7) have been placed within the sleeves 60 and 61.

The respective textile wick sheets affording the sleeves shown in FIG. 7 are folded and tucked in an identical manner to complete the related sleeve and one half of the wick filler. Thus, referring to the textile sheet for the sleeve 60, this is folded downwardly from the lower end flap 60E to afford one half of an outer side 64, inwardly to afford a bottom side 65, and upwardly to afford an inner side 66. The inner side at the top thereof is folded back on itself at 67 and extended downwardly at 68 in parallel relation to the side 66. The second ply inner side 68 is directed downwardly beyond the plane of the lower side 65 and is looped back on itself at 69 to afford the lower half of the filler loop and still a third inner side ply 70 is then turned at right angles to afford the top side 71 which extends across the top of the lubricator in parallel relation above the bottom side 65, and then is turned down at 74 and out to the upper end flap 60E to complete the outer side of the sleeve 60.

The right hand sleeve 61 can be viewed as an inverted mirror image of the left hand sleeve 60 described above, having a filler wick loop 69R which represents the upper loop of the filler wick. The resultant six-ply center section at the inside of the casing 20A is stitched together at 75 along a restricted medial longitudinal portion in the manner described above for the casing 20, and grommets as 36 can be applied at the fore and aft ends of the stitch 75. A lubricator having the casing 20A will have the outward appearance of the lubricator 10, FIG. 2, and when positioned in a journal box, the filler wick loops 69 and 69R will respectively occupy the positions of the filler wick loops 43L and 43U, FIG. 6.

Further modified forms of construction are illustrated in FIGS. 8, 8A and 9, and referring to FIG. 8 the construction illustrated by this figure is identical to what has been described above in connection with FIG. 1,

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except that the center filler wick, designated 43A in FIG. 8, is of greater longitudinal dimension than the sleeves 18 and 19, and the grommets 36, FIG. 2 have been eliminated. Thus, the center filler wick 43A has free edges 43AE that are abutted rather than lapped, and a strap 80 is laid over the abutted edges of the wick 43A and is stitched at 80S parallel to the abutted edges of the wick 43A to firmly secure the strap 80 to the center wick insert. The strap 80 is of substantially greater longitudinal dimension than the center wick 43A, and the free ends of the strap 80 are turned back on themselves to afford end loops 81 and 82. The free ends of the loops are stitched at 81S and 82S to the inner portions of the strap inwardly of the loops 81 and 82.

The loops 81 and 82 constitute handles or hook receiving elements freely available at the front and rear of the lubricator as shown in FIG. 9, which illustrates the lubricator constructed in accordance with FIG. 8 as mounted in position within a railroad journal box. It will also be noted in FIG. 9 that as a result of imparting greater longitudinal dimension to the wick 43A in comparison to the center wick 43 of FIG. 1, the end portions E1 and E2 of the center wick insert or filler 43A will wipe the fillet surfaces F1 and F2 of the car journal respectively at the collar and dust guard seat portions of the car journal. In other words, the sleeves of the lubricator of the present invention normally are of less longitudinal dimension than the distance separating such fillet surfaces of a standard car journal so that the major portions of the sleeves are free of these fillet surfaces, but by lengthening the center filler wick the ends of this wick will embrace the fillet surfaces F1 and F2 and transfer copious amounts of lubricant thereto.

A modified form of the strap shown in FIG. 8 is illustrated at 80A in FIG. 8A. The construction is substantially the same as that illustrated at 80 in FIG. 8, but grommets 85 and 86 are fastened to the loops 81 and 82 on the loop sides of the stitches 81S and 82S. In each instance, however, the use of the strap 80 enables the entire pull to be absorbed or borne by the strap during removal of the lubricator from the journal box or positioning thereof in the journal box. The use of the grommets 85 and 86 in addition to the stitching greatly increases the pull limit, and in any event the stitching discourages unraveling.

It should also be mentioned that while reference has been made to porous pad inserts of rectangular dimension, such dimensioning can be varied, and of course inserts of various forms and kinds can be used. Under proper circumstances, the porous pad inserts could be altogether eliminated and resort had to other means for urging and holding the wicking sleeves and the center wick against the car journal.

It will be seen that under the present invention, two fabric sleeves of wicking material, closed on four sides and open at both ends (except for the retainer elements as 30) are flexibly joined at the inner sides along a restricted medial portion only and are adapted to be filled with porous insert members capable of absorbing large amounts of oil. Resultantly, there are V-channels above and below the medial securement between the sleeves, and wick loops are located therein in such a manner as to afford at least a four-ply center section producing voluminous wicking at the center where the inner sides of the sleeves are joined. The chenille loops are tightly packed in this center section and contribute to further heavy wicking of oil on to the nadir or bottom line of the journal J. Preferably stiff retainers of one construction or another are affixed to the outer sides of the sleeves to project therefrom in normal relation, and constitute stops or retainers engageable with fixed abutments on the inner side walls of the journal box thereby helping to maintain the lubricator in place. Hence, while we have illustrated and described preferred embodiments of our

invention it is to be understood that these are capable of variation and modification, and we therefore do not wish to be limited to the precise details set forth, but desire to avail ourselves of such changes and alterations as fall within the purview of the following claims.

We claim:

1. A lubricator for the journal and bearing of a railroad car and comprising, two elongated closed loop open-ended sleeves of woven wicking material, said sleeves being secured together at their adjacent inner sides along a restricted longitudinal center line to flexibly join the sleeves and produce upwardly and downwardly opening elongated V-channels between the adjacent inner sides of the sleeves respectively above and below said securement, a filler of woven wicking material arranged between said sleeves at their adjacent inner sides, said filler having an upper loose closed loop portion lying in the upper V-channel and a lower loose closed loop portion lying in the lower V-channel, individual pads of oil-absorbent material confined in each of said sleeves, said pads each having enlarged openings formed in the opposed faces thereof and extending but part way through the pad, narrow fabric webs secured to the upper and lower sides of said sleeves at the open ends thereof to maintain the pads in position within said sleeves, grommets affixed to and joining the inner sides of said sleeves, and members of material stiffer than the material comprising said sleeve being secured to the outer sides of said sleeves and projecting outwardly therefrom.

2. A lubricator according to claim 1 wherein the sleeves are each composed of a single piece of light weight fabric woven with pile loops and having the free ends thereof joined at the outer sides of the sleeves to afford a pair of end flaps, and wherein said end flaps have heavy-weight duck secured thereto and overlapping the pile loops on said end flaps.

3. A lubricator according to claim 1 wherein the filler is a separate member.

4. A lubricator according to claim 2 wherein the filler is constructed by reversibly looping the two pieces of fabric material comprising the sleeves to afford a six-ply section between the two sleeves.

5. A lubricator for the journal and bearing of a railroad car, and comprising two elongated sleeves of woven fabric wicking material presenting outer surfaces containing pile loops of wicking material, said sleeves having adjacent inner substantially parallel sides that are substantially vertically oriented when the lubricator is installed in a journal box and said sides being joined together along a restricted longitudinal center portion only whereby the unjoined portions of the adjacent inner sides of the sleeves afford upwardly and downwardly opening V-channels, a wicking filler of separate material having substantially parallel sides that are vertically oriented when the lubricator is installed in the journal box and said wicking filler being arranged between and secured to said adjacent sides of the sleeves to afford a multiple-ply center wick section, said wicking filler presenting outer surfaces containing pile loops of wicking material, said filler having an upper looped portion disposed in the upwardly opening V-channel and a like looped lower portion disposed in the downwardly opening V-channel whereby the center section of the lubricator is characterized by four continuous plies of wicking material that extend from contact with the deepest part of the journal box to the lowest part of the journal such that each of said plies is at least as long as the vertical height of the lubricator, individual pads of porous oil absorbent material confined in each of said sleeves and means for maintaining said pads in place within said sleeves.

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