July 4, 1961 R. J. HARKENRIDER 2,991,135

JOURNAL BOX PACKING

Filed March 10, 1958 3 Sheets-Sheet 1

Fig-1

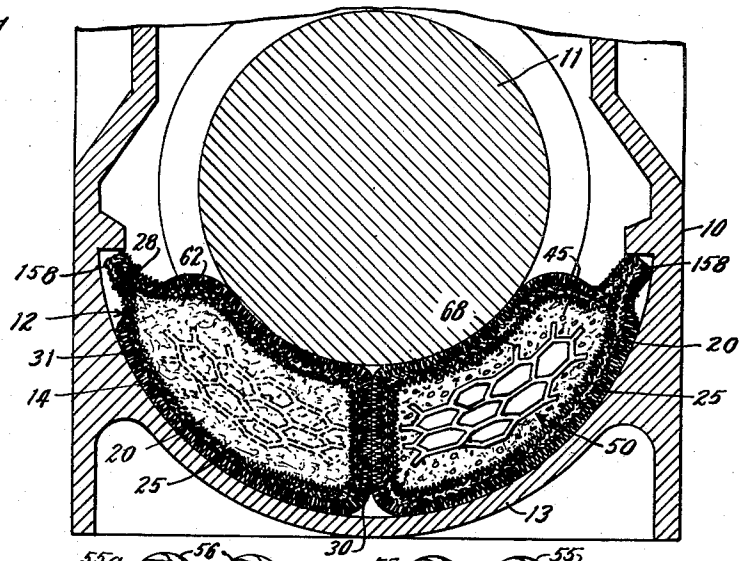


Fig-3

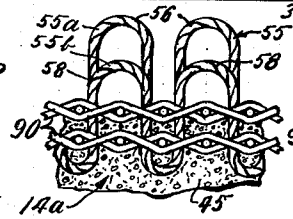


Fig-4

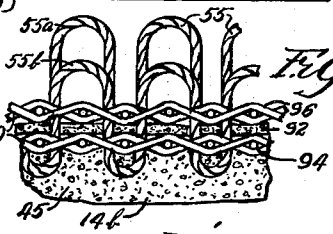


Fig-2

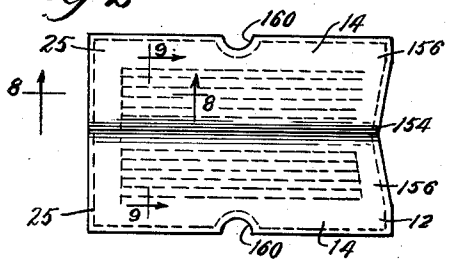


Fig-5

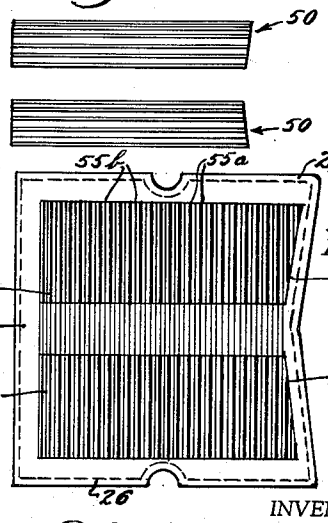


Fig-7

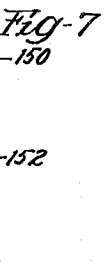
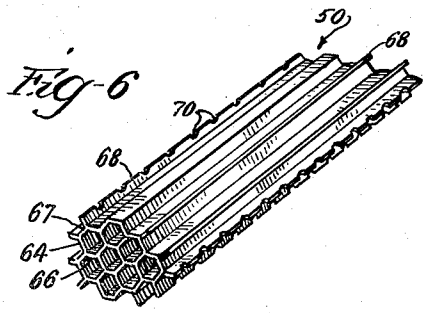


Fig-6



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July 4, 1961 R. J. HARKENRIDER 2,991,135

JOURNAL BOX PACKING

Filed March 10, 1958 3 Sheets-Sheet 2

Fig-8

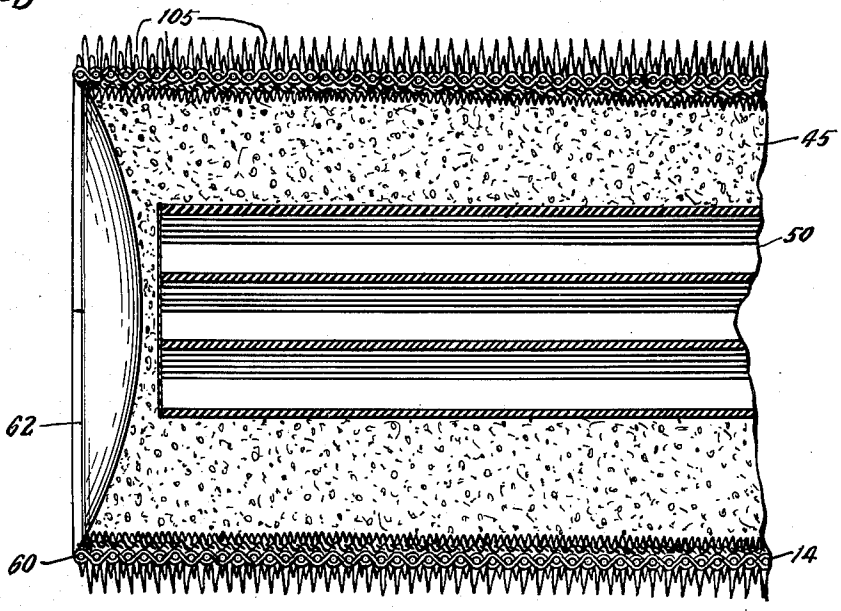


Fig-9

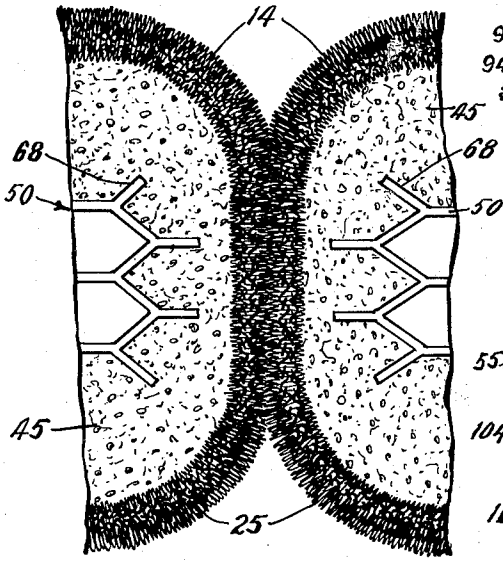


Fig-10

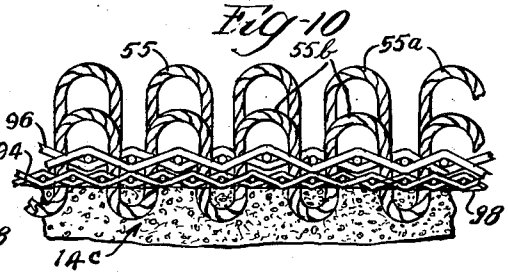
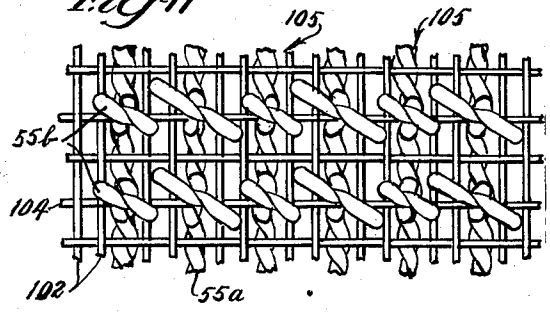


Fig-11



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Fig-12

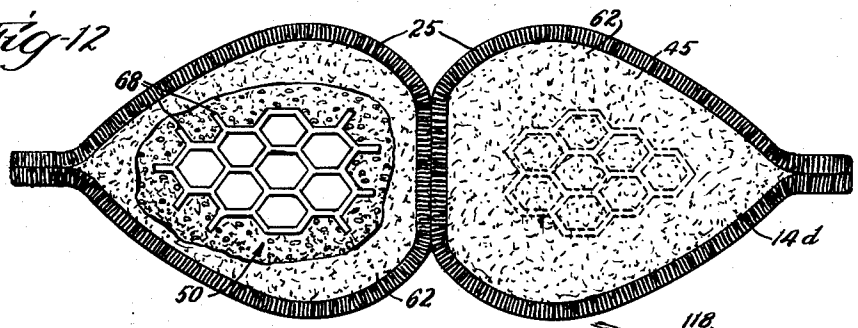


Fig-13

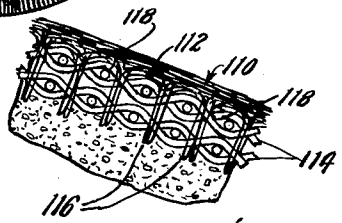


Fig-14

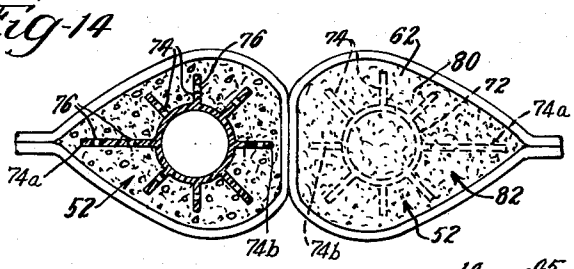


Fig-16

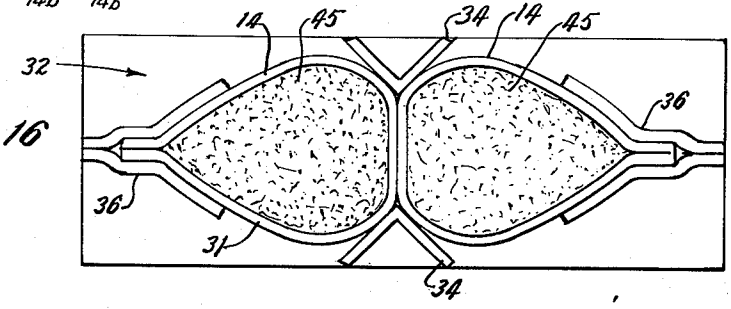


Fig-15

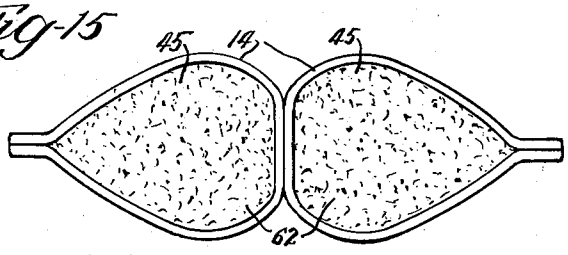
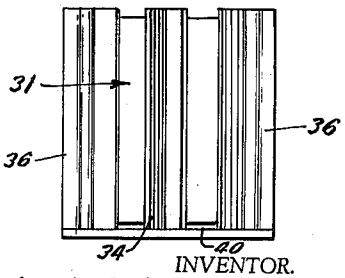


Fig-17



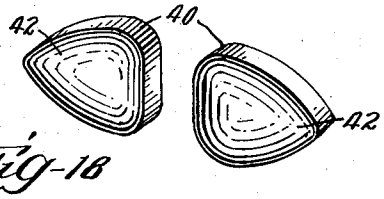


Fig-18

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United States Patent Office 2,991,135 Patented July 4, 1961

2,991,135

JOURNAL BOX PACKING

Robert J. Harkenrider, Winona, Minn., assignor to Miller Lubricator Company, a corporation of Minnesota

Filed Mar. 10, 1958, Ser. No. 720,230
11 Claims. (Cl. 308—243)

My invention relates to a journal box packing for railroad car journal boxes, and more particularly, to a journal box packing package of the type employing a lubricating envelope or blanket of capillary material that is pressed against the journal by a resilient non-metallic core structure formed from lubricant impervious and resisting rubber-like material.

My copending application Serial No. 672,507, filed July 17, 1957, the disclosure of which is hereby specifically incorporated by reference, discloses a packing package of the above type in which a piled lubricating blanket is integrated with a foamed resilient body by foaming the material forming the body such as a polyurethrene foam, directly in place on or within the blanket material. The intimate contact between the foamed material and the blanket material, amoung other things, insures that all capillary fibers of the blanket are firmly anchored in place. The foamed material also catches much of the excess oil that drips or is thrown from the journal and retains it closely adjacent to the applicator surface of the blanket for reapplication to the journal, which has been found to materially increase the film of oil that is applied to the journal.

The present application relates to improved lubricators employing my "foaming in place" principle as well as to an improved form of pile for the lubricating blanket.

A principal object of my invention is to provide a low cost highly integrated packing package having maximum capillary feed characteristics.

A further principal object of my invention is to provide a piled applicator surface for lubricators which includes several pile levels whereby a lower pile level may be relied on to provide the capillary action required after an upper pile level has become ineffective for one reason or another as a result of long usage.

Further objects of the invention are to improve on the lubricating characteristics of lubricators in general, to provide an improved capillary feed material, to improve and simplify the design of core structures employed in journal box packings, and to provide a journal box packing that is generally economical of manufacture, efficient in use and capable of being installed without jacking the box.

Other objects, uses and advantages will be obvious or become apparent from a consideration of the following detailed description and the accompanying drawings.

In the drawings:

FIGURE 1 is a transverse cross-sectional view through familiar parts of a railway car journal and journal box, showing same equipped with one embodiment of my present invention;

FIGURE 2 is a plan view of the lubricator shown in FIGURE 1;

FIGURE 3 is a fragmental diagrammatic sectional view illustrating the improved blanket material that forms a part of the lubricator shown in FIGURE 1;

FIGURE 4 is a view similar to that of FIGURE 3 illustrating a modification of the invention;

FIGURE 5 is a plan view of the inserts that are employed in the embodiment of the invention shown in FIGURE 1;

FIGURE 6 is a diagrammatic perspective view of one of the inserts shown in FIGURE 5;

FIGURE 7 is a diagrammatic plan view of a capillary blanket employed in accordance with the principles of my invention;

FIGURE 8 is a diagrammatic perspective view along line 8—8 of FIGURE 2, on an enlarged scale and illustrating the concave configuration of the ends of the core structures forming a part of my invention;

FIGURE 9 is a diagrammatic cross-sectional view along line 9—9 of FIGURE 2;

FIGURE 10 is a view similar to that of FIGURE 3 illustrating a further modified form of capillary blanket material;

FIGURE 11 is a diagrammatic plan view illustrating how the applicator surface of my improved capillary blankets appear on close inspection;

FIGURE 12 is an end elevational view of a waste blanket type lubricator arranged in accordance with principles of my invention;

FIGURE 13 is a fragmental cross-sectional view on an enlarged scale illustrating the intimate contact between the waste fibers and foam core of the embodiment shown in FIGURE 12;

FIGURE 14 is an end elevational view, partially in section, illustrating a modified form of insert for the core structures herein disclosed;

FIGURE 15 is an end elevational view illustrating a further simplified form of journal box packing;

FIGURE 16 is a plan view of a device for aiding in the application of the foam material to the blanket material of the lubricator, showing the lubricator of FIGURE 15 in position in the device;

FIGURE 17 is an elevational view on a smaller scale of the device shown in FIGURE 16; and

FIGURE 18 is a perspective view of two end caps that may be employed to provide the lubricator core structures with the concave configuration shown in FIGURE 8.

General description

Reference numeral **12** of FIGURE 1 generally indicates one embodiment of my invention, which is shown in place between the lower portion of a conventional axle journal **11** and the bottom **13** of a conventional journal box **10**, in what is commonly referred to as the oil or lubricant cellar of the journal box.

The packing **12** generally comprises a pair of attached laminated lubricating or capillary blankets or envelopes **14** integrally united respectively with core structures **20**. The combination blanket and core structure on each side of the packing forms the packing into a twin lobe structure, the lobes being designated **25**.

The blankets **14** each have the general configuration in plan indicated in FIGURE 7 before they are looped to bring opposed edges **26** together for application of stitching **28** that is diagrammatically indicated in FIGURE 1. Prior to the application of stitching **28**, a pair of blankets are stitched together along the area **30** in the manner described in my said copending application.

The purpose of the general configuration of the blankets **14** and the manner of stitching them to provide the configurations illustrated in FIGURE 1 and FIGURE 2, is fully disclosed in my copending application Serial No. 601,011, filed July 30, 1956, now Patent No. 2,927,828, granted March 8, 1960, the disclosure of which is hereby specifically incorporated by reference.

After the blankets **14** have been secured together and the stitching **28** applied to form subassembly **31**, the subassembly may be mounted in a device, such as the mold structure **32** that is diagrammatically illustrated in FIGURE 16, for application of the core structure thereto. The mold structure **32**, which is illustrated only for purposes of suggesting a feasible manner of assembly, in-

cludes spaced center posts **34** and end posts **36** that are generally complementary to the twin lobe outline of the blanket subassembly, and hold the subassembly in an upright position. The mold assembly **32** also includes two pair of caps **40** (see FIGURE 18 wherein one pair of caps is illustrated), one pair of which is placed under the blanket subassembly and the other pair which is retained for use after the core structure has been applied. The caps **40** that are placed at the bottom of the blanket subassembly should have their rounded surfaces **42** facing upwardly, and all the caps should be proportioned to be received within the rims of the looped blankets.

In accordance with my invention, the space that is encircled by the two blankets **14** of the subassembly is then charged with the foam material **45** that comprises the core structure of the twin lobes, the foam material being foamed within the cavities formed by the looped blankets and the blankets acting as molds for casting the core structures. FIGURE 15 illustrates the finished product of the most simplified embodiment of the invention, which calls for the application of foam material without inserts to the blankets to form a solid foam core.

The components of the foam material, which may be, for instance, a polyurethrene foam, are mixed and poured within the two looped blankets after which the top two caps **40** are applied, with their convex surfaces facing downwardly, to close off the upper ends of the blanket assembly. After the foaming period has finished, the completed lubricator is removed from the mold structure **32** and the end caps separated therefrom. The result is the embodiment of the invention shown in FIGURE 15, the end caps **40** providing at both ends of the lubricator the concave end configuration shown in FIGURE 8.

Design considerations have revealed instances where it is desirable to complement the resiliency of the foam material that forms the core structure of the embodiment of FIGURE 15 with a springy insert that is formed from non-porous material to quicken the lubricator's recovery after compression. Reference numerals **50** and **52** in the drawings (see FIGURES 1, 12 and 14) indicate several specific forms of inserts that may be employed, they being suspended within the blankets **14** in any suitable manner as the foam material is applied to the latter. Preferably, the foam material **45** covers the ends of the inserts and closes them off, as indicated in FIGURE 8.

The structural arrangements of my improved blankets themselves are also of considerable significance. In the embodiments of FIGURES 3, 4, 10 and 11, the blanket material is provided with a piled surface that has several pile levels. High lift capillary strands **55** are interwoven, as by a standard type of tufting machine, through the base of the blanket material in such a manner as to form loops **56** and **58**. Strands **55** extend transversely of the journal as indicated in FIGURE 7 and some of the strands **55***a* are formed into relatively long loops **56** while others of the strands **55***b* are formed into relatively short loops **58**. The relationship between the long and short loops is also indicated in FIGURE 7 wherein the darkened lines indicate rows of relatively long loops **56**, the areas outlined by the darkened lines comprising the applicator surfaces **59** of the lubricating blanket. In the illustrated embodiments, only the strands **55***a* form the relatively long loops, while the strands **55***b* form only the short loops, strands **55***a* forming short loops in their lengths intermediate, and on either side, of applicator surfaces **59**.

The relatively long and short loops are in practice closely spaced and provide relatively high and relatively low pile loops. The relatively high pile loops form a high pile level which provides the initial lubricating surface of the blanket. The low loops form a low pile level which insures adequate lubrication after the longer loops have become severed or otherwise inoperative after extended service. By forming the low loops only with strands **55***b*, capillary feed to these loops is assured even after the high loops have become severed during use, which forms breaks in the feed paths of strands **55***a*.

The high and low loops in effect provide a double life wearing surface for the lubricator, and in addition, give a quality of bulk and resilience to the applicator surfaces of the blanket material that materially lengthens its useful life.

The core structures

The foam material employed in the illustrated core structures is preferably of the open cell type, such as polyester foams, polyether foams, and castor oil foams. These substances fall into the category of the so-called urethrene or polyurethrene foams, made by, for instance, Mobay Chemical Company of St. Louis, Missouri. Oil resistant latex foams, such as Hycar foam rubber 1552, made by B. F. Goodrich Company of Akron, Ohio, or vinyl foams will also serve the purpose.

The basic ingredients of, for instance, the polyurethrene foams, which are preferred, are diisocyanates and polyols. These are chain extended by reacting with a small amount of water. During the series of reactions involved, carbon dioxide gas is liberated. If the original viscosity of the polyol is favorable, and if the chain extension increases the viscosity at an appropriate rate, this carbon dioxide gas is trapped in the gel structure just as it is in the rising batter of a cake, whereby a multitude of open cells is formed throughout the mixture. If suitable catalysts have been employed, the resulting foam cures to a stable, solid state. A formula for one type of foam material would be 70–75 parts of polyether glycol, 25–30 parts Hylene organic diisocyanate, 2–3 parts water, 0.5–1 part wetting agent (such as silicone SF–96 made by General Electric Company), and 1 part catalyst, such as mortholine.

The terms "foam rubber or rubber like materials" or "foam rubber like material" as used in this specification and accompanying claims means these foam materials as well as all others having the desired characteristics.

As already mentioned, the ingredients making up the foam material employed are mixed in a conventional manner and then poured into the cavities formed by looped blankets **14**. This may be done in any suitable manner, the mold arrangement of FIGURES 16 and 17 illustrating a convenient way of accomplishing the foaming in place for a small scale operation.

As a result of the foaming in place process, the foam rubber or rubber-like material adheres directly to the fibers and strands of the blankets **14**. This highly integrates the core structure with the blanket material of the lubricator and makes the lubricator a closely knit and unitary packing package.

Where it is desired to employ inserts in the core structure, the foam material is poured around them after they have been suitably suspended within the looped blankets. Preferably, the inserts and the foam that surrounds them are proportioned so that the ends of the inserts are covered by the foam as indicated in FIGURE 8. This precludes the lubricating oil from flowing through the tubes of the inserts when the lubricator is in service in the journal box, which eliminates one possible cause of oil leakage at the rear of the box.

FIGURE 8 also brings out the important relationship between the concavely rounded ends of the foam core structure and the edges **60** of the blanket material. This relationship is provided so that when the lobes of the lubricator are placed under compression, the core structure does not bulge outwardly of the blanket edges **60**, inward folds only being possible in the arrangement shown in FIGURE 8. As indicated, the foam material extends just short of the edge of the blanket material, preferably a spacing of approximately ⅛ inch existing between the outer edge of the core material and the extreme edge **60** of the blanket.

The concave ends **62** of the core structures thus elimi-

nate one of the principal disadvantages of conventional pad-type lubricators. These conventional lubricators employ a core structure such as a sponge or the like, which tends to bulge outwardly of the lubricator when compressed; this means that the distended portions of the lubricator wipe against the fillet and flange of the journal, which results in a rapid deterioration of the lubricator.

The core structure inserts indicated at **50** are a product that is similar to the core structure described in my Patent No. 2,801,138, granted July 30, 1957. The inserts **50** are best illustrated in FIGURES 1, 5 and 6, and comprise a stack of like parallel tubes in which each tube **64** has wall portions **66** in common with other tubes **64** and integral with them at the adjoining corners **67**. The inserts are conveniently made by extruding them in one piece, whereby the cellular structure is entirely integral and the distribution of material makes it possible to have an extremely light, springy element which has a strong resistance to deforming under pressure and a high recovery upon release, even after being compressed for a long time under adverse temperature conditions.

Inserts corresponding to those indicated at **50** can be made in a variety of forms. Almost any polygonal form can be thus extruded whether regular, irregular, rightangular or otherwise. Circular forms are also contemplated.

The configuration of inserts **50** is the equilateral hexagon type, and this is preferred because it lends itself so readily to making products of this type, and it has a structure that is particularly adapted for use as a resilient core member for lubricators.

The inserts herein illustrated may be produced in accordance with the invention described in my application Serial No. 418,442, filed March 24, 1954, now Patent No. 2,908,037, granted October 13, 1959, the disclosure of which is specifically incorporated herein by this reference. The material used is an oil resistant, rubber-like material, such as Hycar, a product of said B. F. Goodrich Company.

Preferably the inserts **50** are each provided with laterally extending wings or tabs **68**. As indicated in FIGURE 1, these wings or tabs extend into the foam material and provide a greater surface area to which the foam material may adhere. The wings or tabs **68** may be scalloped as at **70** (see FIGURE 6) to further increase the gripping action of the foam material on the inserts.

The inserts **52** illustrated in FIGURE 14 are illustrative of other types of inserts that may be made in the same manner that is described above and substituted for inserts **50**. Inserts **52** comprise a single tube **72** that extends longitudinally of the lubricator and which is provided with a plurality of laterally extending wings or tabs **74** that are embedded in the foam material. Tabs or wings **74** may be perforated as indicated at **76** to increase the bond between the foam material and the insert, or said tabs or wings may be scalloped in the manner indicated in FIGURE 6. I also contemplate that tabs **68** of FIGURE 6 may be formed with perforations such as perforations **76** instead of scallops **70**.

The wings or tabs **74***a* and **74***b* of the embodiment of FIGURE 14 divide the foam material into an upper section **80** and a lower section **82**. When the lubricator of FIGURE 14 is employed in the manner indicated in FIGURE 1, the upper body of foam **80** is substantially cut off from the lower body of foam **82** in each core structure of the lubricator. During rotation of the journal, the lubricating oil will tend to saturate the upper body **80**, thus maintaining a larger quantity of oil adjacent the applicator surface of the lubricator. The upwardly extending wings or tabs **74** also trap oil within the foam material and prevent it from draining through the foam material back to the bottom of the journal box.

The blanket material

The multi-pile level blanket material may be provided in several different embodiments.

In the embodiment **14***a* of FIGURE 3, the strands **55** are passed through two layers of press cloth **90**, the foam material **45** bonding directly to the lower layer **90** and extending upwardly through the mesh of the lower layer into contact with the upper layer **90**, the strands **55** being embedded in the foam at the bases of loops **56** and **58**. In the modified embodiment **14***b* of FIGURE 4, a foam insert **92** is employed between a lower sisal mesh layer **94** (the latter providing increased tensile strength), and an upper press cloth layer **96**, the yarns **55** passing through the foam insert **92** as well as the woven fabrics indicated at **94** and **96**. The foam insert, which may be on the order of ⅛ inch to ¼ inch in thickness, is made from one of the foam materials specified above and is preferably equal in length to the applicator surfaces outlined by the dark lines of FIGURE 7, though it may be coextensive with the entire blanket if so desired. It may either be a separate piece of foam material that is merely applied between fabric layers **94** and **96** before strands **55** are applied thereto, or it may be foamed in place on one of the layers **94** or **96** before the tufting operation is performed.

The blanket material **14***b* is employed in the same manner as blanket material **14***a*, the foam insert **92** catching much of the oil that drips or is thrown from the journal. The strands **55** being embedded in the insert by the tufting operation, the oil that they lift from the oil reservoir is supplemented by that collecting in the insert, which insures a materially increased feed to the journal with a corresponding increase in oil film on the journal during normal operating conditions.

In the embodiment **14***c* of FIGURE 10, the strands **55** pass through a lower layer **94** of sisal mesh and an upper layer **96** of press cloth, and the undersurface of the blanket material is coated with an appropriate adhesive **98**, such as Hycar latex No. 1552, type OR–25, made from petroleum by B. F. Goodrich Chemical Company, of Akron, Ohio, and thickened with a 12 percent ammonium casein solution. The adhesive **98** may comprise many appropriate materials, any of which are known as rubber base cements. They may be used in powder form, sheet form or liquid. A number of suitable synthetic rubbers are described in "Materials Handbook" by Brady, 1944, McGraw-Hill, page 523.

The surface to which the adhesive **98** is applied is the undersurface of the blanket, and the adhesive fastens all threads that go to the underside of the blanket including the threads of yarns **55**. It securely unites the yarns **55**, the press cloth **96** and the sisal fabric **94** together to provide a stabilized and uniform lubricating blanket material.

The strands **55** are preferably of the four-ply type, three of the plies being formed of cotton fibers and the fourth ply being a uniform blend of 50 percent wool and 50 percent nylon. As indicated in FIGURE 11, the strands **55** may be spaced from each other by two warp threads **102**, the loops **56** and **58** being formed over alternate woof threads **104**. As indicated above, in accordance with my invention, only strands **55***a* form the relatively long loops while the strands **55***b* form only relatively short loops, this relationship being further illustrated in FIGURE 11, and being employed in all the illustrated blanket materials. Moreover, each strand **55** forms a row of loops in which the loops are disposed consecutively transversely of the journal (see FIGURES 7 and 11).

A further important feature of the invention is that the combination of the transversely extending rows of high and low loops formed by adjacent strands **55** form channels between the high loops, into which excess lubricant that drips or is thrown off the journal drains and is

conveyed back to the journal along the top of the lubricator, as indicated by the proportioning of lobes **25** illustrated in FIGURE 1. The same channels are present along the underside of the lubricator, and thus facilitate the return of oil to bottom of the oil reservoir. These channels are indicated at **105** in FIGURES 8 and 11. Of course, this drainage of the lubricant brings it into intimate contact with loops **56** and **58**, which materially adds to the oil that they apply to the journal.

The press cloth and sisal fabrics above described are preferably formed to have maximum high capillary lift characteristics.

In the embodiment of FIGURES 12 and 13, a blanket material **14***d* of the type described in my Patent No. 2,762,667 is employed as modified in the manner described in my said copending application Serial No. 601,011. The blanket material **110** comprises a relatively thick layer of carded waste **112** interlaced with a pair of woven carrier cloths **114** in the form of open weave laundry bag cloth (in the embodiment of FIGURE 12), and a relatively thin layer of waste **116**. The cloths **114** are preferably woven from strands or yarns made up of high capillary action material such as Vicara, cotton or a mixture of both.

In accordance with the description of said Patents No. 2,762,667, and No. 2,801,138, the three layers are thoroughly fastened together by passing them through a hooking machine of the type, for instance, illustrated in Patent No. 2,672,673, granted March 23, 1954. The thinner waste layer **116** may be formed entirely by hooking threads through the fabric **114**, or it can be in part formed by feeding a thin layer of carded waste under the carrier cloth before reaching the hooking machine or in a supplementary or preliminary hooking machine.

The blanket material **110** is given the general outline illustrated in FIGURE 7 and a pair of the blankets are secured together in the manner described in my said copending application Serial No. 601,011. The core structures **20** herein described are then applied in the same manner that is described above, the foam material adhering directly to the fibers of waste layer **116** as well as under carrier layer **114**. The foam also adheres to the fibers of the upper or larger waste layer **112** that are pulled down through the layers **114** where indicated at **118**. The foam material thus acts to hold all components of the waste blanket material **110** securely together.

The blanket material employed in the embodiments of FIGURES 14 and 15 may be any of the types described above. And all of the lubricators illustrated may be provided with appropriate handles for aiding in removing them from the box.

Advantages of the invention

A number of the important advantages of the invention have already been brought out. However, it may be mentioned that the important center feed principle described in my said copending applications Serial Nos. 601,011 and 672,507 is retained, which, coupled with the multi-level pile arrangement, insures an increased oil film on the journal during operation. These features of the invention, together with the oil catching function of the foam material employed, also insure adequate lubrication with a reduced supply of oil in the box.

The tufted high lift strands eliminate undesirable loose ends, and each loop formed by the strands is securely anchored to the blanket by the foam material or the adhesive of FIGURE 10.

The general configuration of the packing **12** and the reasons therefor have been described in several of my said copending applications. As seen in FIGURE 2, the notches or indentations **150** of the rear edges **152** of the blankets **14** combine to provide a re-entrant angle or notch or indentation **154** in the rear of the lubricator, which forms a drain port outwardly of the rear fillet of the journal and permits the excess oil accumulating between the two lubricating lobes during operation of the journal to drain back to the oil reservoir of the box. The notch **154** also permits the rear fillet of the journal to be positioned between the lobe ends **156** of the lubricator without contacting and deforming the packing to form a sort of "pitcher spout" that acts to pour excess oil out of the rear of the journal box. Ends **156** act as stops that contact the rear end of the journal box as the packing is slipped into place.

The outwardly extending side edges **158** of the lubricator have a "peaked" or tent-like configuration (see FIGURE 1) that forms shelf or ledge means which tends to catch a good portion of the surplus oil that drips from the journal during operation, thereby further saturating the area of each blanket **14** at the juncture of the respective blankets and the journal surface. This provides for a further increase in the film of oil that is applied to the journal.

The semi-circular notches or cut-out portion **160** on the side edges of the packing not only aid in making the packing more flexible, but also permit installation in bolted boxes having internal bosses; these cut-out portions not only permit the packing to clear these bosses, but also help to prevent it from shifting toward the front of the box, since the cut-out portions will be received about the bosses.

It will be observed that the package **12** in all its embodiments is substantially symmetrical, and that when it is desirable to present a new surface against the journal, the packing may be removed, turned over, and reinserted; thus used surface of the blankets will be facing downwardly in the journal box and the hitherto unused surface of the blankets will be in contact with the journal. The package **12** is thus a two-sided or reversible one with corresponding increase in useful life. Moreover, by positioning the edges of the blankets at the sides of the packing, capillary action is just as good regardless of which side of the lubricator is in contact with the journal.

The core structures being positioned well within the front and rear edges of the packing and having concave end surfaces (see FIGURE 8), they will not bulge outwardly of the packing when same is compressed. This eliminates the possibility of damage to the lubricator due to contact with parts of the rotation journal.

The foam material employed for the foam bodies or layers of my invention should have a number of characteristics. First of all, the foam material should have a low compression set, in the range of five to ten percent (compression set is the set that the foam material takes under a standard set of conditions). A further important characteristic is that the foam material should be resistant to car journal lubricating oils for a minimum period of six to eight years. The foam material should also be resistant to temperatures approximating 250 degrees F. (preferably 300 degrees F.) and should be of a type that will retain a high degree of flexibility at sub-zero temperatures. As mentioned above, the open cell characteristic is of prime importance as it is the open cells that catch the lubricant.

The foam material should also have a relatively good tensile strength, at least several times that of natural rubber foams. The material selected should have a deflection curve roughly approaching that of rubber foams and in addition the foams should have good adhesive qualities.

I have found that the polyether type foams with a density of two to four pounds per cubic foot seem to possess the most suitable combination of properties for journal lubricator application.

The lubricating pads herein disclosed may be renovated for reuse after long periods of service by adaptation of standard waste washing machines.

This application is a continuation-in-part of my said copending application Serial No. 672,507, filed July 17, 1957.

Parenthetically, it should be understood that the illus-

trations of FIGURES 2, 3, 10, 11 and 13 are largely diagrammatic in nature, the illustrated loops and fibers in practice being spaced much more closely together.

The foregoing description and the drawings are given merely to explain and illustrate my invention and the invention is not limited thereto, except insofar as the appended claims are so limited, since those skilled in the art who have my disclosure before them will be able to make modifications and variations therein without departing from the scope of the invention.

I claim:

1. In a lubricator for a railroad car journal of the type in which the floor of the box serves as an oil reservoir and oil is lifted by the lubricator to the undersurface of a car axle journal that extends into the box, said lubricator comprising a resilient core structure adapted to be compressed and inserted in an operative position in the box between the axle journal and the floor of the box, and a blanket integrated with said core structure and adapted to be interposed between said core structure and the journal when the lubricator is in operative position in the box and resiliently urged against the journal by said core structure and with at least a part of the blanket extending into the oil reservoir when the lubricator is in operative position in the box, said blanket comprising a fabric sheet through which a plurality of continuous generally parallel strands of capillary material have been interlaced, said strands being oriented to extend transversely of the journal when the lubricator is in operative position in the box, said strands being formed into a multitude of loops in the area of the blanket that is adapted to contact the journal when the lubricator is in operative position in the box to provide a piled oil applicator surface, said loops projecting outwardly of said surface, and at least some of said strands forming only relatively long loops, and the remainder of said strands forming only relatively short loops, said remainder strands being interposed between said some strands whereby said applicator surface is made up of relatively high and relatively low pile levels having independent oil feeds when the lubricator is in operative position in the box.

2. For use on an axle journal supported within a journal box having an oil cellar at the bottom thereof, a lubricator adapted to be inserted in the box between the journal and the bottom of the box, and including side edges that are respectively adapted to be positioned adjacent the respective sides of the box when the lubricator is placed in operative position in the box, said lubricator comprising twin lobes adapted to extend longitudinally of the journal when the lubricator is in operative position in the box and each lobe defining an upper applicator surface adapted to be placed in contact with the journal when the lubricator is in operative position in the box, each of said lobes including continuous strands of capillary material adapted to feed oil to the respective applicator surfaces, and resilient means for urging the applicator surfaces into contact with the journal when the lubricator is in operative position in the box, said strands of each lobe being oriented to extend from said applicator surface thereof to substantially the bottom of the oil cellar along substantially the center line of the box when the lubricator is in operative position in the box, said strands being further oriented to extend generally transversely of the journal when the lubricator is in operative position in the box and forming across said surfaces, respectively, a multitude of pile forming loops, at least some of said strands forming relatively long loops that are disposed in rows that extend transversely of the journal when the lubricator is in operative position in the box, and the remainder of said strands forming only relatively short loops that are disposed in rows that extend transversely of the journal when the lubricator is in operative position in the box, whereby said surface of each lobe is made up of relatively high and relatively low pile levels.

3. The lubricator set forth in claim 2 wherein alternate strands form the said short and long loops, respectively, said rows of short and long loops forming oil receiving channels that extend transversely of the journal when the lubricator is in operative position in the box.

4. In a lubricating pad including an applicator surface for applying lubricant to a journal, said pad comprising a pair of woven fabric sheets through which a plurality of generally parallel strands have been interlaced to form a multitude of pile forming loops, and a sheet of resilient material interposed between said fabric sheets, said sheet of resilient material being formed from open celled lubricant resisting foam rubber-like material.

5. In a lubricator for a railroad car journal box of the type in which the floor of the box serves as an oil reservoir and oil is lifted by the lubricator to the undersurface of an axle journal that extends into the box, said lubricator comprising a resilient body adapted to be compressed and inserted in an operative position in the box between the axle journal and the floor of the box, said body including a multitude of continuous capillary strands disposed in parallel relationship and oriented to extend transversely of the journal between the oil in the oil reservoir of the box and an applicator surface of the body that is placed in contact with the journal when the lubricator is in its operative position in the box, said strands in the area of said applicator surface being formed into a multitude of loops projecting outwardly of said applicator surface to define a pile across said applicator surface, some of said strands forming only relatively long loops in said surface and others of said strands forming only relatively short loops in said surface, said some and said others of said strands being intermingled across the applicator surface, whereby said applicator surface comprises a multilevel pile arrangement in which the separate oil levels have independent pile feeds.

6. The lubricator set forth in claim 5 wherein said strands are incorporated in a sheet-like structure, and wherein the undersurface of said sheet-like structure includes means for making said loops individually fast thereto.

7. In a lubricator pad including an applicator surface for applying lubricant to a journal when the pad is in operative relation to the journal, said pad comprising a fabric blanket structure looped to define a pocket that is oriented to extend longitudinally of the journal when the pad is in operative relation to the journal, said pocket terminating in forward and rearward ends disposed respectively in substantially parallel planes extending transversely of said pocket, and a body of foam rubber-like material received in and substantially filling said pocket and adhering directly to said blanket structure about said pocket and along the length thereof, said body of foam rubber-like material comprising a multitude of open cells with those cells adhering to said blanket structure forming direct lubricant feed paths between said body of foam rubber-like material and said blanket structure respectively, said body of foam rubber-like material thereby being in intimate lubricant transmitting contact with said blanket structure, said body of foam rubber-like material being concavely formed at said ends of said pocket and terminating short of said ends.

8. The pad set forth in claim 7 wherein a tubular insert is embedded in said body, said insert extending longitudinally of said pocket and comprising a flexible springy tubular member formed from non-porous lubricant impervious material.

9. The pad set forth in claim 8 wherein said insert includes a plurality of tabs that extend laterally thereof into said material forming said body.

10. The pad set forth in claim 8 wherein the ends of said insert are covered by said material forming said body.

11. The pad set forth in claim 9 wherein said tabs are

recessed to increase the bond between said insert and said material.

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UNITED STATES PATENT OFFICE

CERTIFICATE OF CORRECTION

Patent No. 2,991,135 July 4, 1961

Robert J. Harkenrider

It is hereby certified that error appears in the above numbered patent requiring correction and that the said Letters Patent should read as corrected below.

Column 6, line 43, for "many" read -- any --; same line for "any" read -- many --; column 10, line 36, for "oil" read -- pile --; same line for "pile" read -- oil --.

Signed and sealed this 10th day of April 1962.

(SEAL)
Attest:

ERNEST W. SWIDER
Attesting Officer

DAVID L. LADD
Commissioner of Patents