Jan. 1, 1952 J W. HULSON 2,581,020

JOURNAL LUBRICATOR

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Fig. 1,

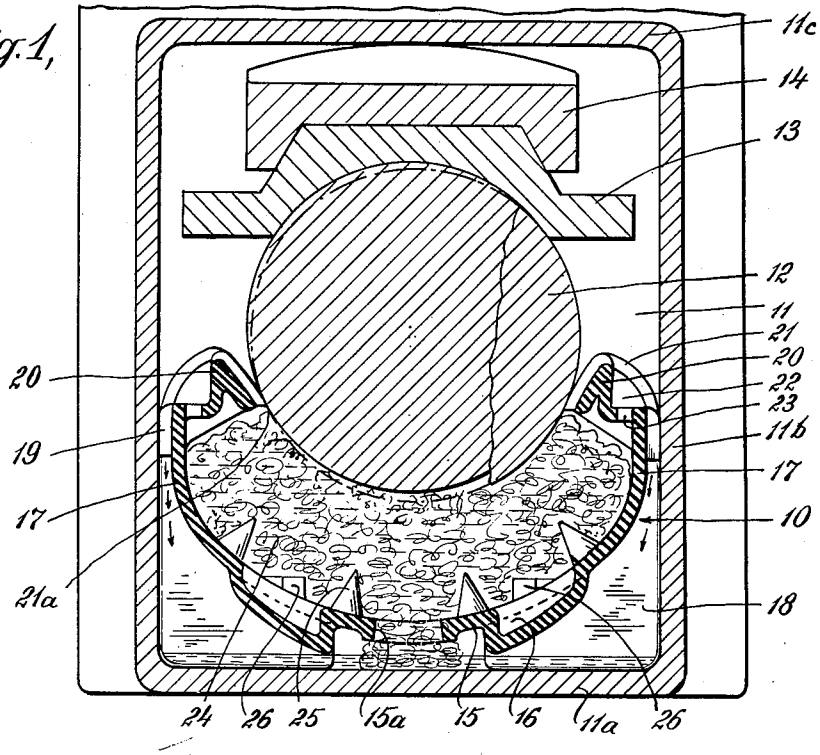
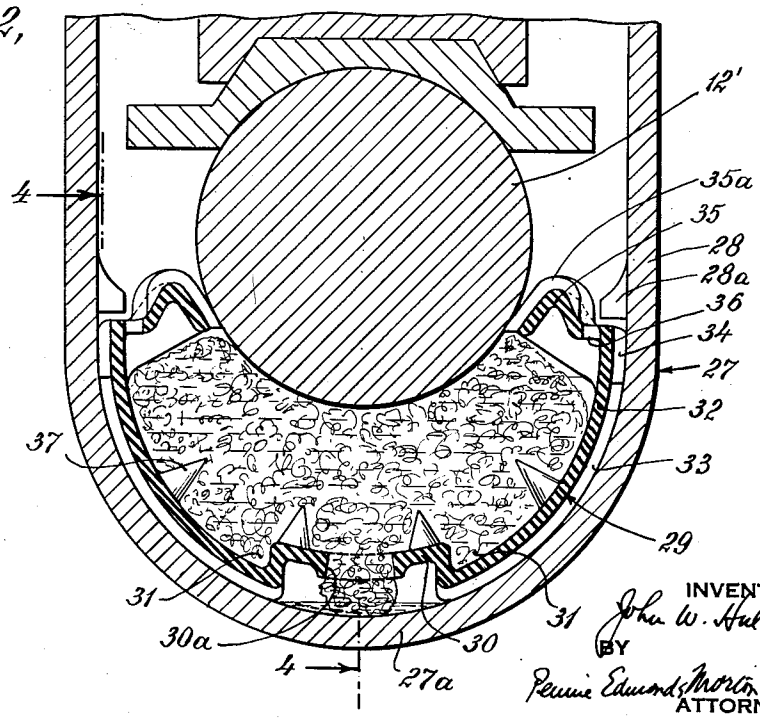


Fig. 2,



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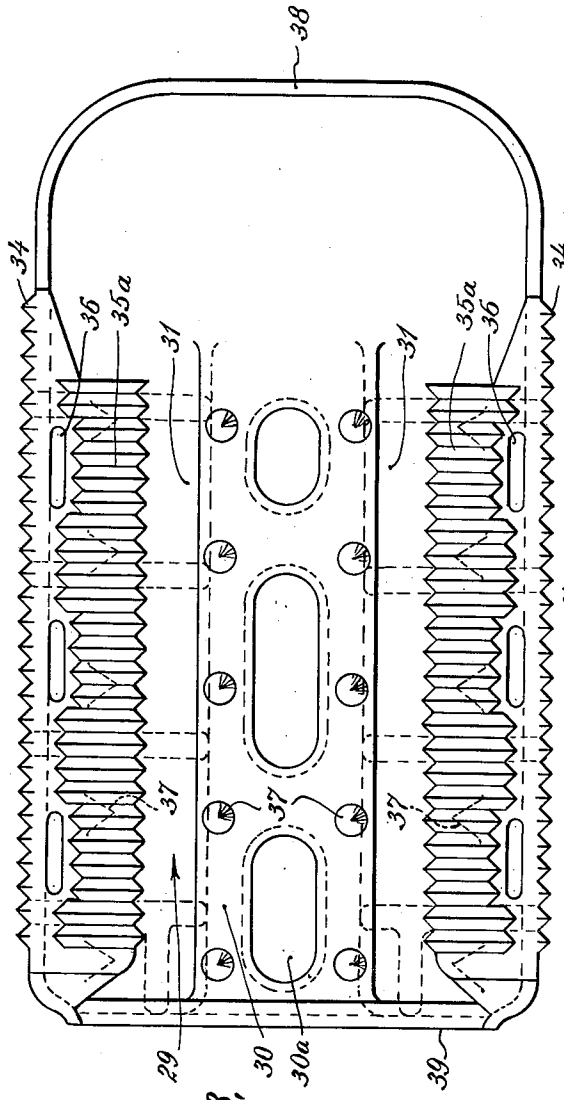


Fig. 3.

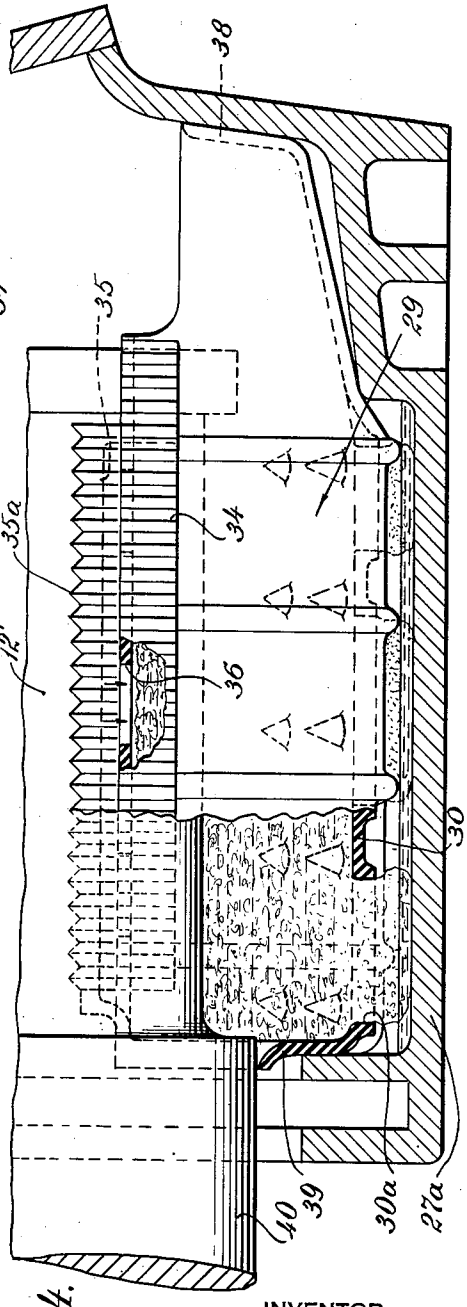


Fig. 4.

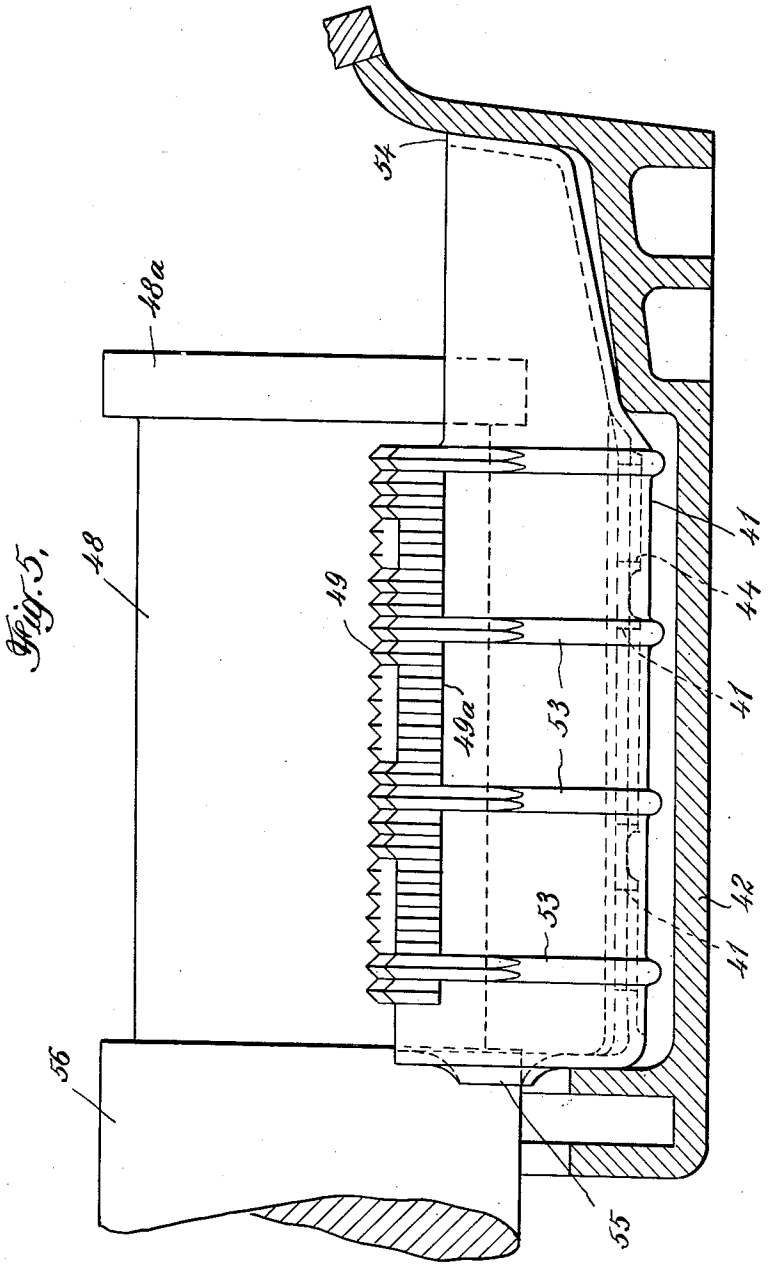
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Fig. 5.



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Fig. 6,

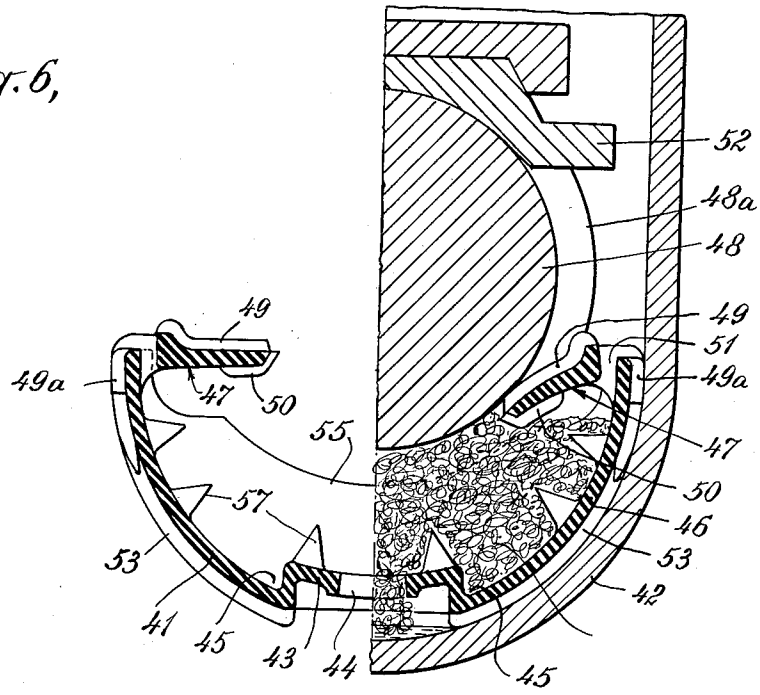
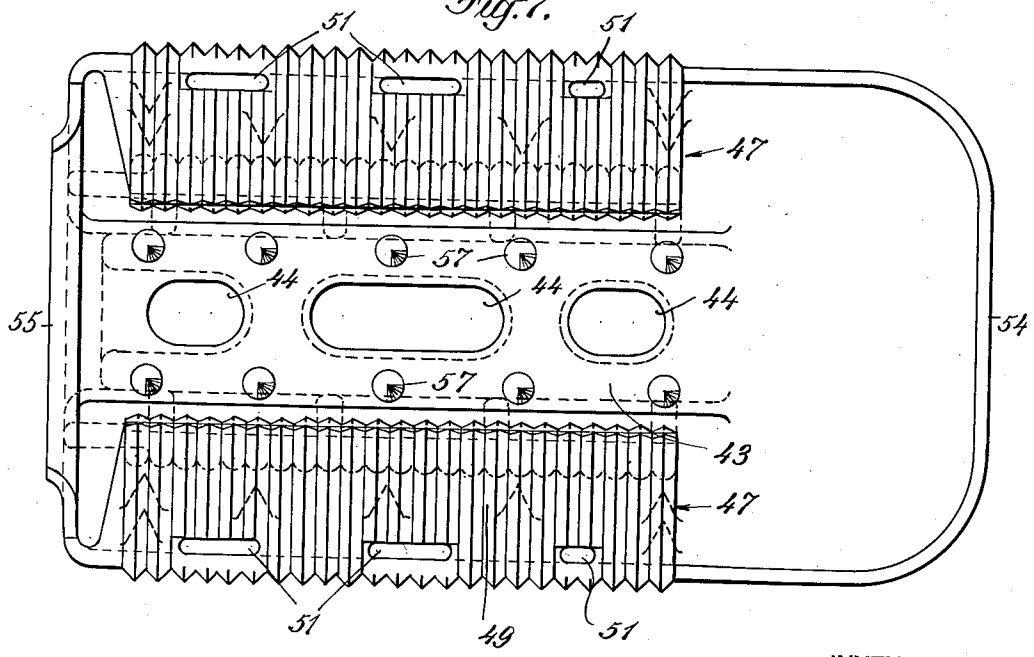


Fig. 7.



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UNITED STATES PATENT OFFICE

2,581,020

JOURNAL LUBRICATOR

John W. Hulson, Chicago, Ill., assignor to Hulson Company, Chicago, Ill., a corporation of Iowa

Application July 29, 1950, Serial No. 176,622

16 Claims. (Cl. 308—87)

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This invention relates to the lubrication of the journals of railway vehicles, the journal boxes of which are packed with waste serving as means for retaining the lubricating oil and for applying it to the journals. More particularly, the invention is concerned with a novel lubricating device for use in a journal box of the type referred to, for the purpose of holding the waste in proper position to engage the journal. The new device is superior to prior similar devices, in that it prevents strands of waste from being carried up with the journal and caught between the journal and the brass, and it directs dirty oil thrown from the rotating journal away from the top of the packing of waste and into the bottom of the journal box, where the oil is taken up by the waste, while the dirt remains behind. The device is made in one piece of a flexible oil-resistant material, preferably a suitable synthetic rubber, and it is easily inserted in a journal box and is not injured either by the usual waste packing operations or by the relative shifting of the journal and the journal box, when the vehicle is subjected to heavy impact.

The new lubricator comprises a vessel having a width closely approximating that of the journal box, in which it is to be used. The bottom of the vessel is provided with means to support it on the bottom of the box and the central longitudinal section of the bottom of the vessel is provided with openings elongated lengthwise of the vessel. On opposite sides of the central section, the bottom is formed to provide sumps, in which oil can collect, and the bottom curves upwardly from the sumps to form side walls lying opposite the journal. The top of each side wall is provided with an inwardly extending flange formed with a series of spaced projections, preferably in the form of sharp parallel ridges lying transverse to the long axis of the vessel and extending from the inner edge of the flange outwardly over the top thereof to terminate close to the side wall. Similar projections are formed on the outer surface of each side wall near its upper end and each flange is provided with a plurality of holes lying inwardly from its side wall. At its rear end, the vessel has a wall extending upwardly to engage the axle adjacent the inner shoulder of the journal, while the forward end of the vessel extends past the outer end of the journal to terminate at the front end of the box in a wall, the upper edge of which lies close to the lower edge of the opening closed by the journal box cover.

For a better understanding of the invention,

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reference may be made to the accompanying drawings, in which:

Fig. 1 is a vertical transverse sectional view through one conventional type of journal box containing one form of the new lubricator;

Fig. 2 is a view similar to Fig. 1, showing another form of the lubricator for use in a different type of box;

Fig. 3 is a top plan view of the lubricator shown in Fig. 2;

Fig. 4 is a vertical sectional view on the line 4—4 of Fig. 2;

Fig. 5 is a vertical sectional view through a journal box containing a modified form of the new lubricator;

Fig. 6 is a transverse view, of which the left half shows the lubricator of Fig. 5 prior to installation in a journal box and the right half shows the lubricator installed; and

Fig. 7 is a plan view of the lubricator of Fig. 5.

In Fig. 1, the new lubricator 10 is illustrated as installed in a journal box 11 having a flat bottom 11a and vertical side walls 11b. The box is of the type frequently used on passenger cars and the journal 12 projects into the box through an opening in the rear wall. A bearing brass 13 rests upon the journal within the box and a wedge 14 is interposed between the brass and the top wall 11c of the box.

The new lubricator, which is of one piece construction and preferably made of an oil-resistant synthetic rubber, has the form of a vessel 10 provided with an upwardly concave bottom having a central longitudinal section 15 formed with a plurality of openings 15a elongated lengthwise of the vessel. On opposite sides of the central section, the bottom of the vessel is formed with depressions 16 serving as sumps for holding lubricating oil. The bottom curves upwardly from the outer edges of the sumps to merge into side walls 17. In order to support the curved bottom vessel firmly on the flat bottom 11a of the journal box, the bottom of the vessel is provided with a plurality of legs 18, which engage both the side walls 11b and the bottom of the box.

Near its upper end, the outer surface of each side wall 17 of the lubricator is formed with a series of spaced projections 19, which are preferably parallel ribs of triangular cross-section extending vertically and lying with their sharp edges in contact with the inner surfaces of the side walls 11b of the journal box. At its top, each side walls is formed with a flange 20 of vertical arched cross-section, which is provided on its upper surface with a series of projections 21,

preferably having the form of parallel ribs of triangular cross-section extending transverse to the long axis of the lubricator. In the construction shown in Fig. 1, each flange is formed on its outer side with a plurality of recesses **22**, spaced along the flange, and each recess has a passage **23** leading from its bottom surface through the wall of the lubricator close to the inner surface of a side wall **17** thereof. Between the recesses, the ribs **21** extend from one edge of the flange over the top thereof to the opposite edge. Opposite each recess, the ribs extend from the inner edge of the flange over the top to the top edge of the recess.

The shape and position of the flanges are such that, when the lubricator is in normal position in a journal box, the ends **21***a* of the sharp edges of the ribs on the inner sides of the flanges bear against the journal and the flanges are slightly compressed. Sometimes, when the car is subjected to severe impact, the journal may be momentarily displaced relative to the brass, as is shown in Fig. 1, and, when this occurs, one flange of the lubricator, for example, that at the right in Fig. 1, will be flattened somewhat and the other will expand, but the edges of the ribs on the flanges will make contact at all times with the journal.

In the use of the lubricator, it is collapsed slightly by forcing its side walls toward one another, and then passed through the opening at the front of the journal box and beneath the journal. When the side walls are released, they spring apart and the flanges bear against the journal, as described. A quantity of waste **24** is then inserted into the lubricator beneath the journal and some of the waste is forced by means of a packing iron through openings **15***a* into the bottom of the box. In order to hold the waste in position, the bottom of the lubricator is provided with a plurality of pointed pins **25**, which penetrate the waste. Oil is then fed into the forward end of the lubricator and it saturates the waste and also runs through openings **15***a* into the bottom of the box. The lubricator is formed with a pair of projections **26** on the bottom near the front end to show the proper level of the oil in the box.

The alternative form of the lubricator shown in Figs. 2–4, inc., is for use in a journal box **27**, having a round bottom **27***a* merging into vertical side walls **28**, each of which is formed with an integral horizontal waste-retaining rib **28***a* on inner surface. The lubricator **29** has a round bottom of a curvature like that of the bottom of the box and the bottom of the lubricator has a central section **30** extending lengthwise and formed with elongated openings **30***a*. The bottom of the lubricator has a pair of sumps **31** on opposite sides of the central section and, beyond the sumps, the bottom merges into vertical side walls **32**, which terminate just below the ribs **28***a* on the box. The outer surfaces of the side walls and bottom of the sumps of the lubricator are provided with spaced transverse beads **33**, engaging the inner surfaces of the box and holding the bottom and side walls of the lubricator slightly spaced therefrom.

At its upper end, each side wall **32** has spaced vertical projections on its outer surface, which are preferably ribs of triangular section and lie with their sharp edges in contact with the inner surface of the side wall of the journal box. The top end of each side wall is provided with a flange **35** of arch secttion, the flange being connected to the side wall through a lateral extension lying beneath the rib **28***a* on the wall of the box and having openings **36** lying close to the inner surface of the adjacent side wall **32** of the lubricator. Each flange **35** is provided with ribs **35***a* of triangular section, which lie transverse to the flange and extend from the inner edge of the flange over the top thereof to terminate either adjacent the end of adjacent side wall **32** or close to one edge of an opening **36**. The sharp edges of the inner ends of the ribs **35***a* bear against the journal **12'** and each flange is slightly compressed under normal conditions. The bottom of the lubricator is provided with a plurality of pointed projections **37** for holding in place the waste to be inserted in the lubricator.

At its forward end **38**, the lubricator projects beyond the end of the journal into the front of the box so that oil may be readily introduced into the lubricator through the front-end of the box. At its rear end, the lubricator has a wall **39**, which extends upwardly to terminate close to the shoulder at which the journal merges with the axle **40**.

The form of the new lubricator shown in Figs. 5–7, inc. is preferred for installation on cars to be used in high speed express service, in which the cars are subjected to unusually severe forces when passing over switches, cross-overs, etc. This form of the lubricator includes a one-piece vessel **41** having a bottom curved to fit the bottom of the journal box **42** and formed with a raised central section **43** extending lengthwise of the vessel and having elongated openings **44**. On opposite sides of the central section, the bottom is formed with oil sumps **45**, outwardly from which the vessel has side walls **46**. A flange **47** extends inwardly from the upper end of each side wall and the side walls are lower and the flanges longer than in the constructions of Figs. 1 and 2, so that, when the lubricator is installed in the journal box, the top of each side wall lies well below the axis of the journal **48** and the flanges are bent downwardly by their engagement with the journal.

Each flange **47** is formed with spaced transverse projections **49**, preferably in the form of ribs of triangular section, on its upper surface and similar projections **50** on a part of its under surface, projections **50** extending somewhat beyond the inner edge of the flange. Each flange is also formed with a plurality of openings **51** leading to the interior of the vessel along the inner surface of the adjacent side wall **46**. The projections **49** on the upper surface of each flange have short extensions **49***a* on the outer surface of the adjacent side wall **46**. The flanges **47** terminate well inward from the collar **48***a* on the end of the journal, when the lubricator is installed, and there are no projections **49***a* on the outer side of each side wall beyond the outer ends of the flanges **47**. There are thus no parts of the lubricator, except the upper portions of the side walls **46**, between the journal collar **48***a* and the sides of the box, so that, in the event of great displacement of the journal from the brass **52**, no damage will be done to the lubricator.

The vessel **46** is provided with spaced transverse beads **53** on the outer surfaces of side walls **46** and the bottom of the vessel, the beads engaging the inner surface of the journal box and supporting the vessel. At its forward end **54**, the vessel lies in contact with the front wall of the journal box and its rear wall **55** engages the axle **56** inwardly from the inner end of the jour-

nal. The vessel is provided with spaced projections 57 on its inner surface for engaging and anchoring the waste 58.

In the use of the new lubricator in any of the forms shown, the lubricator is installed in the journal box to rest upon the bottom of the box and the sharp edges of the ribs on the flanges bear against the journal. The waste in inserted into the lubricator at its front end and forced into position by the usual packing iron. In the packing operation, some of the waste is forced down through the openings in the bottom of the lubricator to the bottom of the box. The desired quantity of oil is then introduced into the lubricator and saturates the waste and collects in the bottom of the box. When the lubricator is thus installed, the flanges of the boxes shown in Figs. 1 and 2 are under slight compression, while those of the box of Fig. 5 are bent downwardly. In all three forms, the ends of the ribs on the flanges bear against the journal. As the journal rotates, some of the oil thrown free from the journal strikes the side of the box and flows down outside the lubricator to collect in the bottom of the box. Oil thrown from the journal against a flange of the lubricator flows downwardly either between the ribs on the upper face of the flange or through the openings in the flange to collect in the sumps and enter the waste within the lubricator. Oil, which collects in the bottom of the box, is likely to be contaminated with dirt and the oil rises through the waste by capillary action but the dirt remains behind.

In the event that the car, on which the lubricator of Fig. 1 or Fig. 2, is used, is subjected to severe impact, which causes the journal to shift partially from beneath the brass, as shown in Fig. 1, the flange on the lubricator at one side of the journal is compressed and the other expands. Under similar conditions, one flange of the lubricator of Fig. 5 is bent down further, while the other may rise slightly. Since the ribs extend completely across the top of each flange, in all forms of the lubricator, the ribs contact with the journal at all times despite distortion of the flanges and there is no possibility of a flat smooth part of the lubricator bearing against the journal and wiping it free of oil. Also, since the flanges are under compression or are flexed at all times, they maintain contact with the journal as it wears down. The ribs on the flanges function at all times to prevent strands of waste from being carried up by the journal and caught beneath the brass. The formation of the bottom of the lubricator with the two sumps insures that a supply of oil will be in contact with the waste, even though the oil in the box itself is relatively low. The lubricator thus prevents the occurrence of conditions, under which hot boxes develop.

I claim:

1. A lubricator for use in a journal box for holding a packing of waste in contact with the journal, which comprises a vessel of flexible resilient material having a bottom formed with a plurality of openings in the central section thereof and oil sumps on opposite sides of said section, side walls extending upwardly from the sides of the bottom of the vessel, spaced projections on the outer surfaces of the side walls adapted to engage the sides of the journal box, and flanges extending inwardly from the upper ends of said side walls, each flange having spaced projections on its inner edge adapted to engage the journal and a plurality of openings through it adjacent its connection to its side wall.

2. A lubricator for use in a journal box for holding a packing of waste in contact with the journal, which comprises a vessel of flexible resilient material having a bottom formed with a plurality of openings in the central section thereof and oil sumps on opposite sides of said section, side walls extending upwardly from the sides of the bottom of the vessel, spaced projections on the outer surfaces of the side walls adapted to engage the sides of the journal box, and flanges extending inwardly from the upper ends of said side walls, the flanges being substantially of arch section and having projections on the inner and outer sides of the top surfaces thereof, the projections on the inner side of the top surface of each flange being adapted to engage the journal.

3. A lubricator for use in a journal box for holding a packing of waste in contact with the journal, which comprises a vessel of flexible resilient material having a bottom formed with a plurality of openings in the central section thereof and oil sumps on opposite sides of said section, side walls extending upwardly from the sides of the bottom of the vessel, spaced projections on the outer surfaces of the side walls adapted to engage the sides of the journal box, and flanges extending inwardly from the upper ends of said side walls, each flange having spaced projections on its inner edge and top surface, and a plurality of openings through it inward from its connection to its side wall, the projections on the upper surface of the flange being adapted to engage the journal.

4. A lubricator for use in a journal box for holding a packing of waste in contact with the journal, which comprises a vessel of flexible resilient material having a bottom formed with a plurality of openings in the central section thereof and oil sumps on opposite sides of said section, side walls extending upwardly from the sides of the bottom of the vessel, spaced projections on the outer surfaces of the side walls adapted to engage the sides of the journal box, and flanges extending inwardly from the upper ends of said side walls, each flange having a series of transverse ribs of triangular section on its inner edge and across its top surface, the edges of the ribs adjacent the inner edge of the flange being adapted to engage the journal.

5. A lubricator for use in a journal box for holding a packing of waste in contact with the journal, which comprises a vessel of flexible resilient material having a bottom formed with a plurality of openings in the central section thereof and oil sumps on opposite sides of said section, side walls extending upwardly from the sides of the bottom of the vessel, spaced projections on the outer surfaces of the side walls adapted to engage the sides of the journal box, and flanges extending inwardly from the upper ends of said side walls, each flange having a series of transverse ribs of triangular section across its top surface and a plurality of openings through it inward from its connection to its side wall, the edges of the ribs adjacent the inner edge of the flange being adapted to engage the journal.

6. A lubricator for use in a journal box for holding a packing of waste in contact with the journal, which comprises a vessel of flexible resilient material having a bottom formed with a plurality of openings in the central section thereof and oil sumps on opposite sides of said section, side walls extending upwardly from th sides of the bottom of the vessel, a series o

vertical ribs of triangular section on the outer surface of each side wall, the edges of the ribs being adapted to engage the inner surfaces of the vertical walls of the journal box, and flanges extending inwardly from the upper ends of said side walls, each flange having a series of transverse ribs of triangular section on its top surface, the edges of the ribs adjacent the inner edge of the flange being adapted to engage the journal.

7. A lubricator for use in a journal box for holding a packing of waste in contact with the journal, which comprises a vessel of flexible resilient material having a bottom formed with a plurality of openings in the central section thereof and oil sumps on opposite sides of said section, side walls extending upwardly from the sides of the bottom of the vessel, a series of vertical ribs of triangular section on the outer surface of each side wall, the edges of the ribs being adapted to engage the inner surfaces of the vertical walls of the journal box, and flanges extending inwardly from the upper ends of said side walls, each flange having a plurality of openings through it inward from its connection to its side wall and a series of transverse ribs of triangular section on its top surface, the edges of the ribs adjacent the inner edge of the flange being adapted to engage the journal.

8. A lubricator for use in a journal box for holding a packing of waste in contact with the journal, which comprises a vessel of flexible resilient material having a bottom formed with a longitudinal row of openings along its median line and oil sumps on opposite sides of the row of openings and extending lengthwise of the vessel, projections on the bottom of the vessel adapted to engage the bottom of the box to hold the vessel with its bottom spaced from the bottom of the box, side walls rising from the sides of the bottom of the vessel at the outer edges of the sumps and having spaced projections on their outer surfaces adapted to engage the side walls of the box and hold the side walls of the vessel spaced therefrom, and a pair of flanges connected to the upper ends of the side walls of the vessel and extending inwardly therefrom, the flanges having openings therethrough leading into the interior of the vessel and spaced projections on their tops, the projections adjacent the inner edges of the flanges being adapted to engage the journal.

9. A lubricator for use in a journal box for holding a packing of waste in contact with the journal, which comprises a vessel of flexible resilient material having a bottom formed with a longitudinal row of openings along its median line and oil sumps on opposite sides of the row of openings and extending lengthwise of the vessel, projections on the bottom of the vessel adapted to engage the bottom of the box to hold the vessel with its bottom spaced from the bottom of the box, side walls rising from the sides of the bottom of the vessel at the outer edge of the sumps and having spaced projections on their outer surfaces adapted to engage the side walls of the box and hold the side walls of the vessel spaced therefrom, and flanges connected to the upper ends of the side walls of the vessel and extending inwardly therefrom, each flange having a plurality of openings therethrough leading into the interior of the vessel and a series of transverse ribs of triangular section across its top, the edges of the ribs adjacent the inner edge of the flange being adapted to engage the journal.

10. A lubricator for use in a journal box for holding a packing of waste in contact with the journal, which comprises a vessel of flexible resilient material having a bottom formed with a longitudinal row of openings along its median line and oil sumps on opposite sides of the row of openings and extending lengthwise of the vessel, projections on the bottom of the vessel adapted to engage the bottom of the box to hold the vessel with its bottom spaced from the bottom of the box, side walls rising from the sides of the bottom at the outer edges of the sumps and having vertical ribs of triangular section on their outer surfaces adapted to engage the side walls of the box and hold the side walls of the vessel spaced therefrom, and flanges connected to the upper ends of the side walls of the vessel and extending inwardly therefrom, each flange having a plurality of openings therethrough leading into the interior of the vessel and a series of transverse ribs of triangular section across the top surface of the flange, the edges of the ribs adjacent the inner edges of the flanges being adapted to engage the journal.

11. A lubricator for use in a journal box for holding a packing of waste in contact with the journal, which comprises a vessel of flexible resilient material having a bottom formed with a plurality of openings in its central section and sumps extending lengthwise of the bottom on opposite sides of the group of openings, side walls rising from the sides of the bottom and adapted to terminate above the lowermost surface of the journal and below the axis of the journal, and flanges extending inwardly from the upper ends of the side walls toward the journal and having openings therethrough leading to the interior of the vessel, each flange having an inner section leading upwardly and outwardly from the journal, the section being formed with a series of transverse ribs, the edges of which are adapted to engage the journal.

12. A lubricator for use in a journal box for holding a packing of waste in contact with the journal, which comprises a vessel of flexible resilient material having a bottom formed with a plurality of openings in its central section and sumps extending lengthwise of the bottom on opposite sides of the group of openings, side walls rising from the sides of the bottom and adapted to terminate above the lowermost surface of the journal and below the axis of the journal, and flanges extending inwardly from the upper ends of the side walls toward the journal and having openings therethrough leading to the interior of the vessel, each flange having an inner section leading upwardly and outwardly from the journal and an outer section leading outwardly and downwardly from the outer end of the inner section, each flange being formed with a plurality of openings in its outer section leading to the interior of the vessel and a series of transverse ribs of triangular section extending across the tops of the sections, the edges of the ribs on the inner section near the inner end thereof being adapted to bear against the journal.

13. A lubricator for use in a journal box for holding a packing of waste in contact with the journal, which comprises a vessel of flexible resilient material having a perforated bottom, side walls extending upwardly from the sides of the bottom, spaced projections on the outer surfaces of the side walls adapted to engage the sides of the box and hold the side walls spaced therefrom, and flanges extending inwardly from the upper ends of said side walls, each flange having

spaced projections on its top surface and inner edge, the projections adjacent the inner edge of the flange normally engaging the journal.

14. A lubricator for use in a journal box for holding a packing of waste in contact with the journal, which comprises a vessel of flexible resilient material having a perforated bottom, side walls extending upwardly from the sides of the bottom, spaced projections on the outer surfaces of the side walls adapted to engage the sides of the box and hold the side walls spaced therefrom, and flanges extending inwardly from the upper ends of said side walls, each flange having a plurality of holes through it adjacent its connection to its side wall and spaced projections on its top surface and inner edge, the projections adjacent the inner edge of the flange normally engaging the journal.

15. A lubricator for use in a journal box for holding a packing of waste in contact with the journal, which comprises a vessel of flexible resilient material having a perforated bottom, side walls extending upwardly from the sides of the bottom, spaced projections on the outer surfaces

of the side walls adapted to engage the sides of the box and hold the side walls spaced therefrom, and flanges extending inwardly from the upper ends of said side walls, each flange having a plurality of holes through it adjacent its connection to its side wall and a series of transverse ribs of triangular section on its top surface and inner edge, the ends of the ribs adjacent the inner edge of the flange normally engaging the journal.

16. A lubricator for use in a journal box for holding a packing of waste in contact with the journal which comprises a vessel of rubber having side walls and flanges extending inwardly from the upper end of the respective sidewalls, each flange having openings through it leading to the interior of the vessel and spaced projections extending across its upper surface, the free ends of the projections adjacent the inner edges of the flanges normally engaging the journal and the flanges being distorted by the journal.

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No references cited.