May 26, 1942. R. W. MILLER 2,283,939

JOURNAL LUBRICATOR

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Fig. 1.

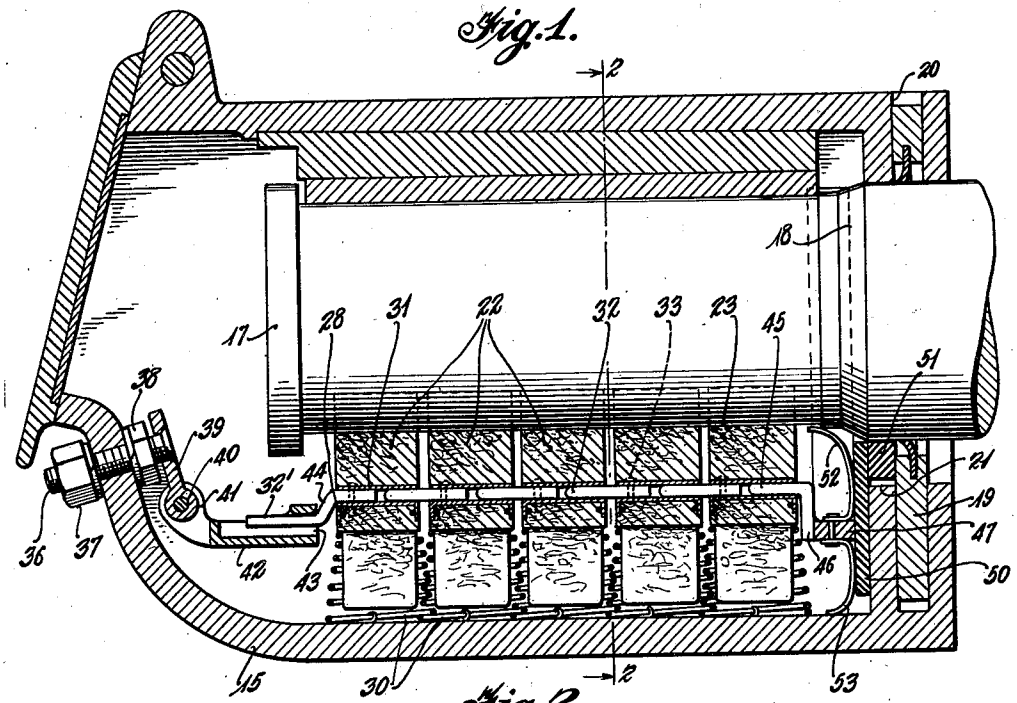


Fig. 2.

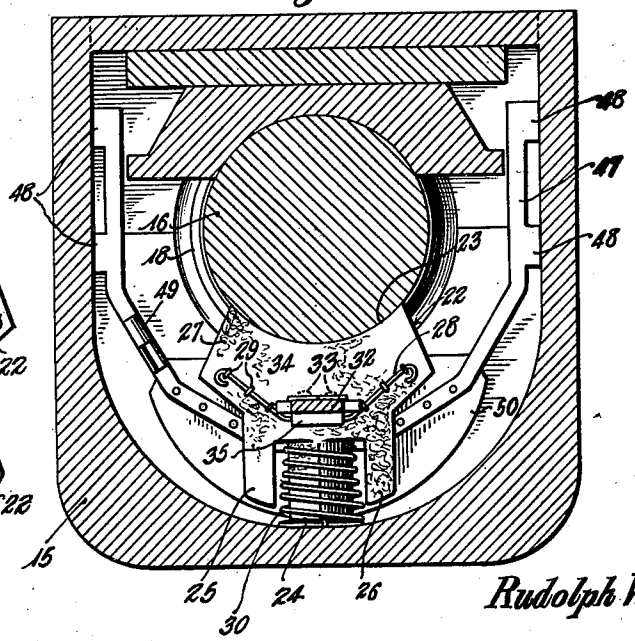
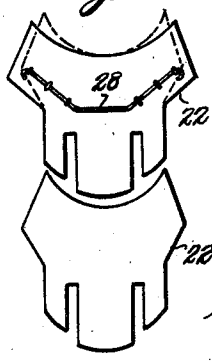


Fig. 19.



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Fig. 3.

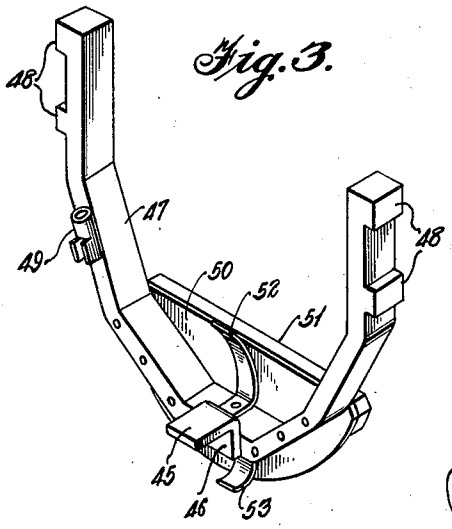


Fig. 4.

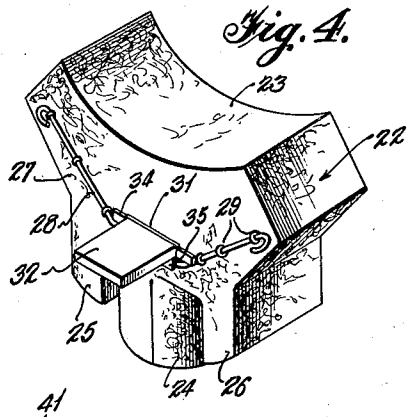


Fig. 5.

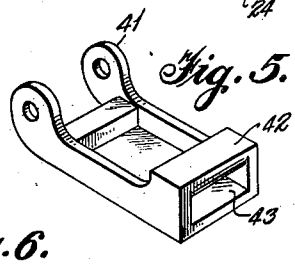
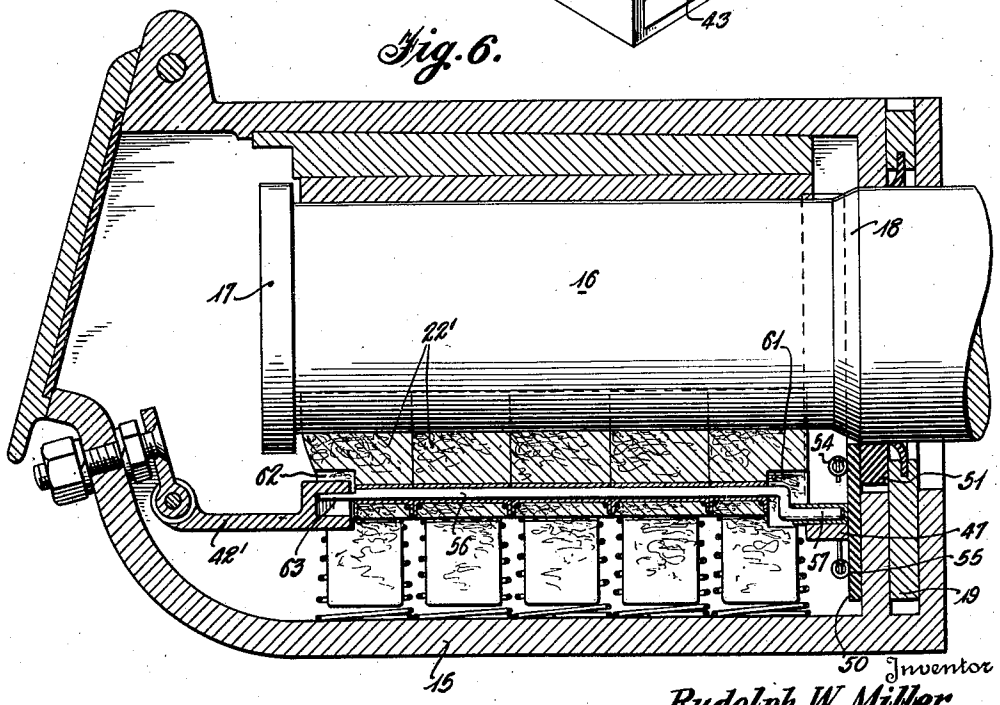


Fig. 6.



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Fig. 11.

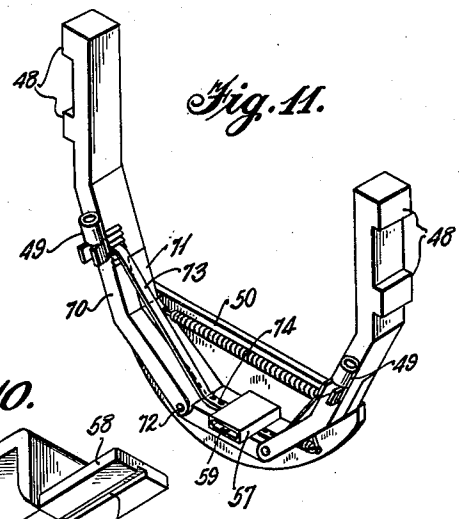


Fig. 9.

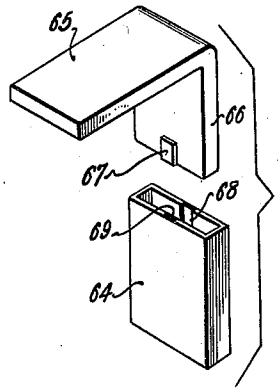


Fig. 10.

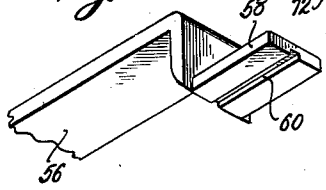


Fig. 7.

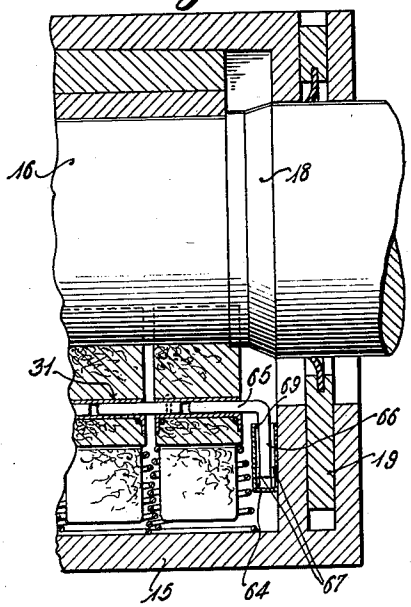


Fig. 8.

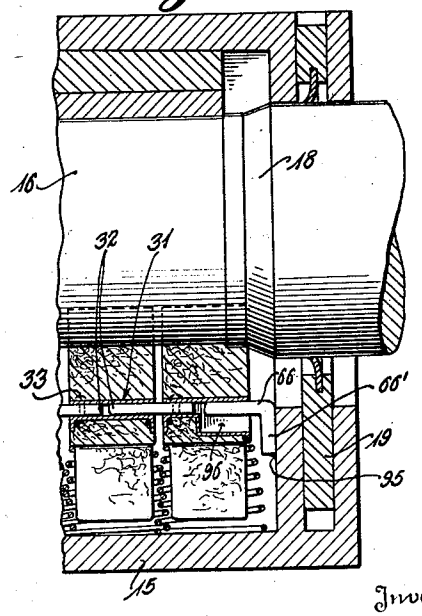
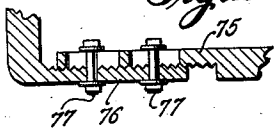


Fig. 12.



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Fig. 13.

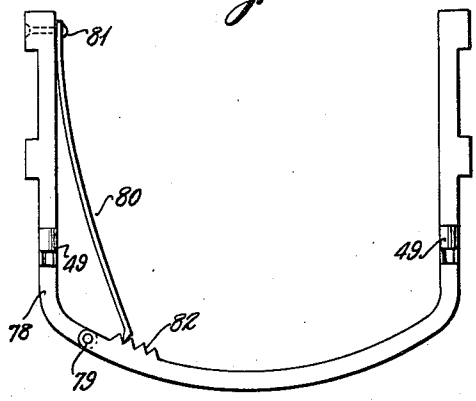


Fig. 14.

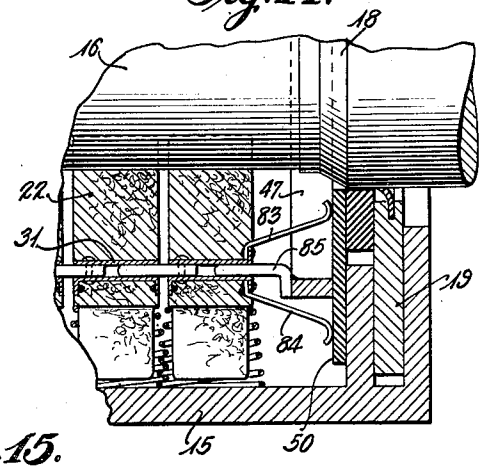


Fig. 15.

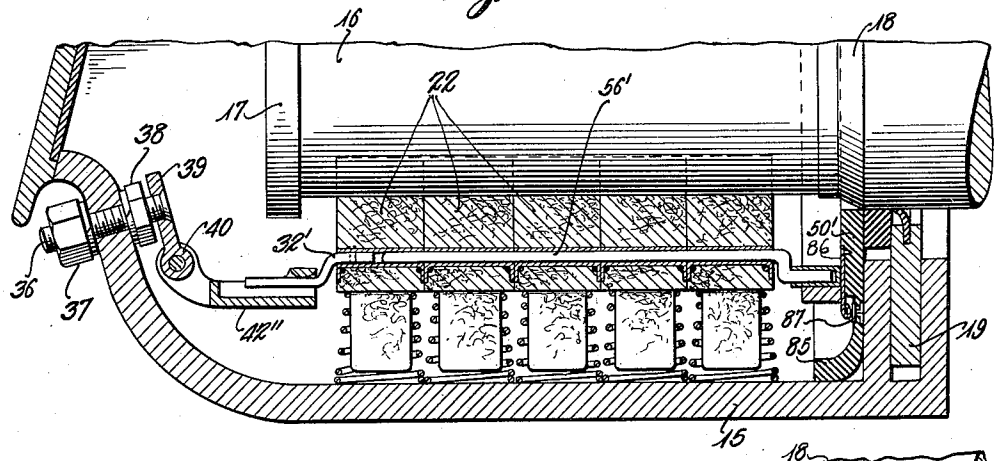


Fig. 17.

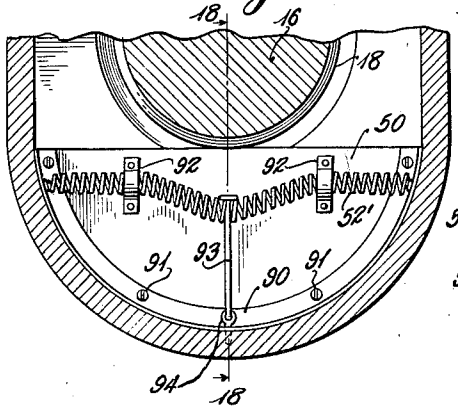


Fig. 18.

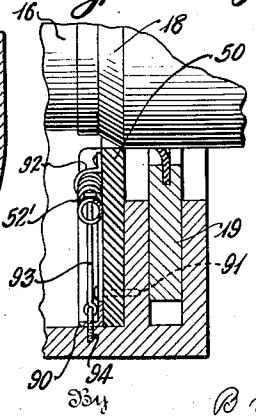
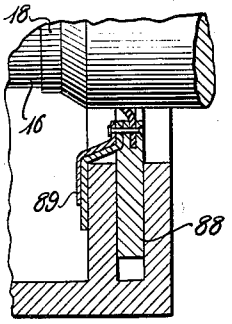


Fig. 16.



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UNITED STATES PATENT OFFICE

2,283,939

JOURNAL LUBRICATOR

Rudolph W. Miller, Winona, Minn.

Application October 19, 1939, Serial No. 300,254

13 Claims. (Cl. 308—88)

The invention relates to lubricators and has as an object the provision of a lubricator comprising preformed felt elements and having means to prevent splashing of oil from the rear of the journal box.

Further objects of the invention are to provide a device of this character having twist-preventing means of improved form; having means to prevent improper installation; being formed to prolong life; having a splash guard at the rear of the journal box with means to keep it in proper relation to the opening below the journal.

Further objects of the invention will appear from the following description when read in connection with the accompanying drawings showing illustrative embodiments of the invention, and wherein—

Figure 1 is a central vertical section of a journal box with one form of lubricator in place;

Fig. 2 is a transverse section on line 2—2 of Figure 1;

Fig. 3 is a perspective view of a twist-preventing U-iron;

Fig. 4 is a perspective view of a felt element;

Fig. 5 is a perspective view of a portion of the fitting at the front of the box;

Fig. 6 is a view similar to Figure 1 of a different form of the device;

Figs. 7 and 8 are detail vertical sections respectively of other forms of the device;

Fig. 9 is an expanded perspective view of portions of the form of Figure 7;

Fig. 10 is a detail perspective view of the rod used in the form of Figure 6;

Fig. 11 is a view similar to Figure 3 of another form of U-iron;

Fig. 12 is a detail side elevation showing a further form of expansible U-iron;

Fig. 13 is a side elevation of a still further form of expansible U-iron;

Fig. 14 is a view similar to Figures 7 and 8 of another form of the device at the rear of the box;

Fig. 15 is a view similar to Figures 1 and 6 showing a still further modification;

Fig. 16 is a detail vertical section through the rear of a journal box showing a combination of a dust guard and sealing flap;

Fig. 17 is a detail vertical transverse section through the rear portion of a journal box showing a splash guard of the invention secured therein; and

Fig. 18 is a detail section on line 18—18 of Figure 17.

Fig. 19 is a view showing steps of preparation of felt elements.

As shown the journal box is indicated at 15 and the journal at 16 having a collar 17 and fillet 18. A usual form of dust guard is indicated at 19 housed in a slot 20 at the rear of the journal box, the opening in the journal box at 21 being of sufficient size to pass the collar 17 in the usual manner.

As shown, the lubricator comprises separate felt elements 22, shown in elevation in Figure 2 and in perspective in Figure 4, the elements formed arcuate at their surfaces 23 to substantially fit the journal and having wick elements 24, 25, 26 projecting downwardly from their bodies 27. To hold the arms of the bodies 27 in proper relation to the journal even when soaked with oil, there are shown spring wires 28 fastened to the bodies 27 as by stiching 29. To press the lubricator elements 22 against the journal, springs 30, one being shown as supplied for each element 22, are shown reacting between the bodies 27 and the bottom of the journal box. The wick elements 24 are surrounded by the springs 30 as shown and the wicks 25 and 26 extend downwardly from the bodies 27 exterior of the springs whereby they are not subject to any compression or any action of the springs which would interfere with their porosity and capillarity.

To preserve the elements 22 in vertical, lateral, and circumferential alignments, the elements are shown as provided with bushings 31, each of the intermediate elements having a section of flattened rod 32 shown as secured in the the bushings by rivets 33.

The ends of the bushings 31 project beyond the bodies 27 and are turned into tabs 34, 35, which are shown as overlapping the spring members 28 to assist in retaining them in position. Each rod 32 is shown as projecting at one face of its element 22 into the socket provided by the adjacent bushing 31.

To hold the front end of the assembled lubricator in location laterally and circumferentially, while permitting vertical motion in response to the relative motion between the journal box and the journal, there is shown a bolt 36 engaged in an opening in the front of the journal box and secured therein by nuts 37 and lock nuts 38, the bolt having a plate 39 provided with a hinge member 40 acting with a hinge member 41 carried upon a fitting 42 shown in perspective in Figure 5. The opening 43 in the fitting 42 is rectangular in cross section and the flattened rod 32' projecting from the front element 32 and deflected downwardly as shown at 44 to clear the collar 17 enters the opening 43 and thereby prevents twisting of the front end of the lubricator.

To prevent twisting of the rear end of the lubricator, there is shown a piece of rod of the same character as 32, 32' indicated at 45, which has its rear end turned downwardly to a portion 46 secured to the U-iron 47 which may be in the form shown in Figures 1, 2, and 3, or that shown in Figures 11, 12, or 13.

The U-iron 47 is shown as provided with projections 48 from which portions may be ground in order to fit the U-iron to the interior of journal boxes of slightly different width so that the iron may move vertically with slight movements of the journal box relative to the journal. To hold the U-iron in place while the first element 22 is being assembled therewith, a socket 49 is shown as provided upon the edge of at least one of the arms which may be engaged by a hook to place the iron in position.

Considerable difficulty has been encountered with an excess of oil escaping at the rear of the box as by splashing, when a lubricator of the present type is used, where there is a body of oil subject to such action. To prevent this there is shown a splash guard 50 carried by the U-iron and preferably made of flexible synthetic rubber. In many cases the simple flap of flexible material will be sufficient but if it is found that there is still too much escape of oil, an additional rib 51 may be supplied upon the upper edge of the flap 50 of a proper vertical dimension to pass through the opening 21 into contact with the dust guard 19.

When the journal box 15 is jacked up for renewal of the brasses the springs 30 will be compressed, the fitting 42 will move about its hinge member and the upper edge of the flap 50 will contact with the fillet 18 of the journal which will result in deflection of the flap inwardly along the surface of the fillet.

To press the flap rearwardly into sealing position there is shown in Figure 1 a spring member 52 secured to the U-iron with its upper end inturned so as to yield inwardly when the journal box is jacked up but which normally presses against the flap 50. A similar member 53 is shown below the U-iron acting in a like manner for the lower portion of the flap.

An alternative structure for this purpose is indicated in Figure 6 where there are shown coiled springs 54, 55, which may be anchored to the arms of the U-iron and being stretched into position will yield inwardly with deflection of the flap but will normally be tensed to straight position by the anchors to hold the flap in operative position.

In the form of Figure 6 a solid rod 56 is substituted for the sectional rod shown in Figure 1. The U-iron 47 is provided with a socket 57 to be engaged by a downwardly projecting terminus 58 of the rod 56, the front end of the rod entering a socket in the fitting member 42' as in the form of the device already described.

To prevent the installation of the rod 56 in inverted position, the socket 57 is shown as formed with a rib 59 and the terminus 58 with a groove 60 to match. In order to prevent the rod 56 from being inserted in the socket 57 wrong end to, the socket 57 and the terminus 58 are made of less width than the body of the rod 56.

The felt elements 22' to be used with this form of the device are similar to those of the form of Figure 1 but have plain bushings only extending therethrough.

To prevent rod 56 from coming into contact with the journal when moved abnormally, the end elements 22' as shown in Figure 6 are recessed at 61, 62 respectively to project over the metal. The length of life of the lubricator will be determined by the wear of the felt elements and if they can be worn nearer to the surface of the rod 56 their life will be longer than would otherwise be the case. To give additional term of life the front end of the rod 56 is shown as thinned away at 63 through the portion which enters the socket of the fitting 42'.

In the form of Figures 7 and 9 a socket member 64 is shown as secured to the rear wall of the box and a section of rod 65 formed with a downturned end 66 to enter the socket. In order that the wrong end of the section 65 may not be inserted into the socket, lugs 67 are shown formed upon the downturned end 66 entering grooves 68 in the socket. To prevent the rod 65 from escaping from the socket during abnormal movement, the upper edge of one groove 68 may be deflected inwardly as at 69 after the rod 65 is in place.

To enable the U-iron to be used with journal boxes of different sizes without excessive or even any grinding away of the projections 48, the U-iron may be made expansible. In the form of Figure 11 the iron is shown as divided longitudinally into overlapping parts 70, 71 hinged together as at 72 and pressed outwardly by means of a flat spring 73 secured at 74 to the main portion of the U-iron and pressing at its upper end against the member 70 to urge the same outwardly in the box. Two sockets 49 are shown upon this form of the U-iron which may be engaged by two tool hooks to hold the U-iron somewhat collapsed while it is being inserted after which it will be pressed outwardly by means of spring 73.

A further form of U-iron may have one of its arms adjusted relative to the other thereof as indicated in Figure 12 where two overlapping parts 75, 76 are serrated at their meeting portions and clamped together by clamp bolts 77 when adjusted to the size required.

In Figure 13 an expansible U-iron is shown comprising one arm 78 hinged at 79 to the remainder of the iron and held in outward adjusted position by spring brace member 80 rigidly secured at 81 to the hinged leg and co-acting with teeth 82 carried by the iron.

Figure 14 shows a form of spring to press the sealing flap to position comprising spring fingers 83, 84 secured to the bushing of the rear felt element 22. Secured to the U-iron 47 is shown a rod section 85 entering the bushing 31 and thus supporting the U-iron in position.

In Figure 15 is shown a flat rod 56' of the form of Figure 6 but shorter and combined with a section of rod 32' carried by the outer element 22 coacting with the socket 42''. The section of rod 32' is shown as downwardly offset and hence no part of it will contact the journal before the felt is completely worn down to the bushing. This form of the device cannot be installed wrong by unskilled labor.

Also in this form of the device the sealing flap 50' is extended to engage tie bottom of the box at 85. At times the U-iron is found to tilt forwardly in the box during movements of the box which allows the sealing flap to leave position. To prevent this there is shown in this figure a leaf spring 86 pressed by the U-iron and having a loop at its end bearing upon a wear-resisting rivet 87 carried by the flap.

A form of sealing flap carried by the dustguard 88 is shown in Figure 16 comprising a flap, as of rubber, riveted to the dustguard and retained in sealing position by a spring member 89.

The splash guard 50 of Figures 17 and 18 is shown as secured to the journal box structure. As shown a metal angle 90 is placed

against the guard and cap screws 91 are passed through the angle and guard to enter screw-threaded openings in the wall of the dust guard channel. The angle may be welded in place or cast integral with the box and the splash guard slipped into the thus provided channel. In the event that it is desired to space the splash guard forwardly from the fillet of the axle a pair of such angles may be provided secured to the bottom and sides of the box or a pair of spaced ribs cast integral therewith to provide a splash guard receiving channel.

To hold the splash guard in position, there is shown in these figures a coil spring 52' anchored at its ends to the angle 90 under considerable tension. This spring may be secured between its ends to the splash guard in any desired manner, as shown by hasps 92. To give added clearance of the spring from the axle, the center of the spring is shown as tied down by a flexible member 93 anchored at 94 to the angle 90. When the box is jacked up to change brasses the guard and spring will yield, to be returned to normal position by the tension of the spring when the jack is removed.

As illustrated in Fig. 19 the felt elements are cut from the sheet in the relative positions as shown, to save material. To effect a further saving the journal contacting surface is cut on a curve or less radius than that to be fitted. For instance for a 5¼ inch journal the curve might be cut on an arc of a 4¼ inch circle. The wire 23 will be initially contracted more than desired in order that when contracted and attached to the felt it shall spread the felt to approximately the 5¼ inch circle.

Minor changes may be made in the physical embodiments of the invention within the scope of the appended claims without departing from the spirit thereof.

I claim:

1. A journal lubricator and oil retainer comprising, in combination: journal contacting absorbent pad means comprising a plurality of elements each extending perpendicular to the axis of the journal, spring means to press said pad means to the journal surface; non-circular rod means penetrating said pad means, preserving the vertical, lateral and circumferential alignment of said elements; means engaging said rod means at its forward portion to prevent lateral and twisting movements thereof; twist preventing means so engaged by the rear portion of said rod means as to permit vertical movement of said rod; unrestricted wick means projecting downwardly from said pad means to dip into a pool of oil in the journal box and a flexible flap member carried by said twist preventing means to prevent splash of said oil through the rear of the journal box.

2. A journal lubricator comprising, in combination: a plurality of pad elements to contact the journal surface; means to press said elements against said surface; non-circular rod means penetrating said elements; the rear end of said rod means offset downwardly and projecting beyond the rear element; a rigid twist preventing member supported by said projecting portion.

3. The combination of claim 2 wherein one of the engaging portions of said rod and member is a socket and the remaining portion projects thereinto.

4. The combination of claim 2 wherein the rod means extends through a plurality of the pad elements and the offset portion enters a socket carried by the member, with means to prevent insertion of the rod in the socket in a wrong position.

5. The combination of claim 2 wherein the rod means extends through a plurality of the pad elements and the offset portion enters a socket carried by the member, with a complementary rib and groove means carried by the engaging surfaces of the rod and socket to prevent wrong insertion.

6. A journal lubricator comprising, in combination: a plurality of pad elements to contact the surface of a journal; means to press said elements against said surface; a non-circular rod penetrating the assembled elements having its rear end downwardly offset; socket means mounted in the box to receive the forward end of said rod; rigid twist preventing means having a socket to receive the rear end of said rod; the last named rod end being smaller in at least one dimension than the forward end of the rod to prevent insertion of the wrong end of the rod in the rear socket; the socket and rear rod end engaging surfaces formed with complementary rib and groove conformations to prevent insertion of the rod in inverted position.

7. In a lubricator having an alignment rod: a U-iron carried by the rod; and a splash guard carried by the U-iron to engage the rear wall of the journal box.

8. The combination of claim 7 in which the splash guard is flexible and a spring means is carried by the structure acting to press the guard against the rear wall of the journal box.

9. The combination of claim 7 with a rib carried by the splash guard extending into contact with the dust guard.

10. The combination of claim 1 in which the farward pad element is recessed to receive the forward rod engaging means, to prevent contact thereof with the journal.

11. A journal lubricator comprising, in combination: a plurality of pad elements to contact the journal surface; means to press said elements against said surface; a non-circular rod means penetrating said elements and having a downwardly bent rear end to enter a twist preventing socket; a socket to receive said end; means to prevent circumferential movement of said socket relative to the journal; coacting surfaces of said end and of the interior of said socket formed with complementary rib and groove means to prevent error in insertion of the rod means end.

12. A felt element for journal lubricators comprising a body cut from a sheet, said body as cut having a journal contacting surface formed on the arc of a circle with a diameter materially less than the diameter of the journal to be fitted; and a U shaped wire support attached to said body under contraction whereby to expand said arc to substantially fit the journal.

13. In a lubricator having an alignment rod: a U iron carried by said rod comprising a central portion; an arm projecting upwardly therefrom; a second arm united to said central portion by an adjustable mechanical connection, movable when loosened to permit adjustment of the separation of the arms; and mechanical means to hold the said movable arm in adjusted position against movement toward the first named arm.

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