April 25, 1933. G. GRANDJEAN 1,905,281

MEANS FOR COLLECTING AND FEEDING OIL TO JOURNAL BEARINGS

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Fig. 1.

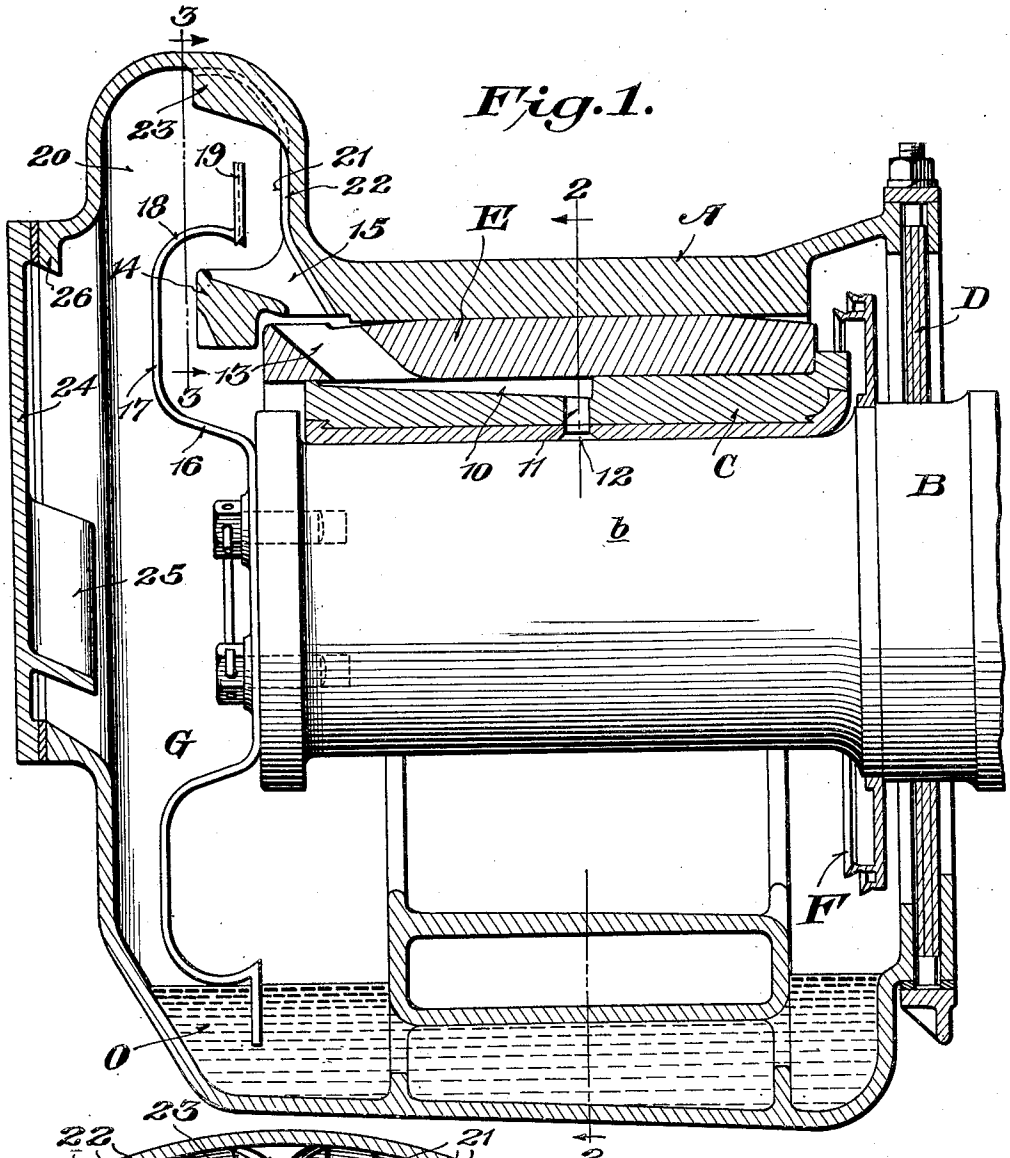
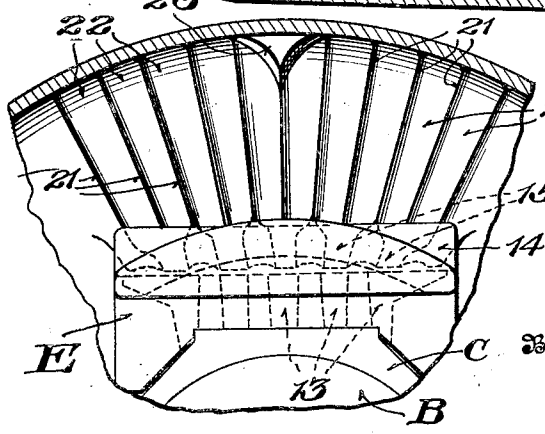


Fig. 3.



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Fig. 2.

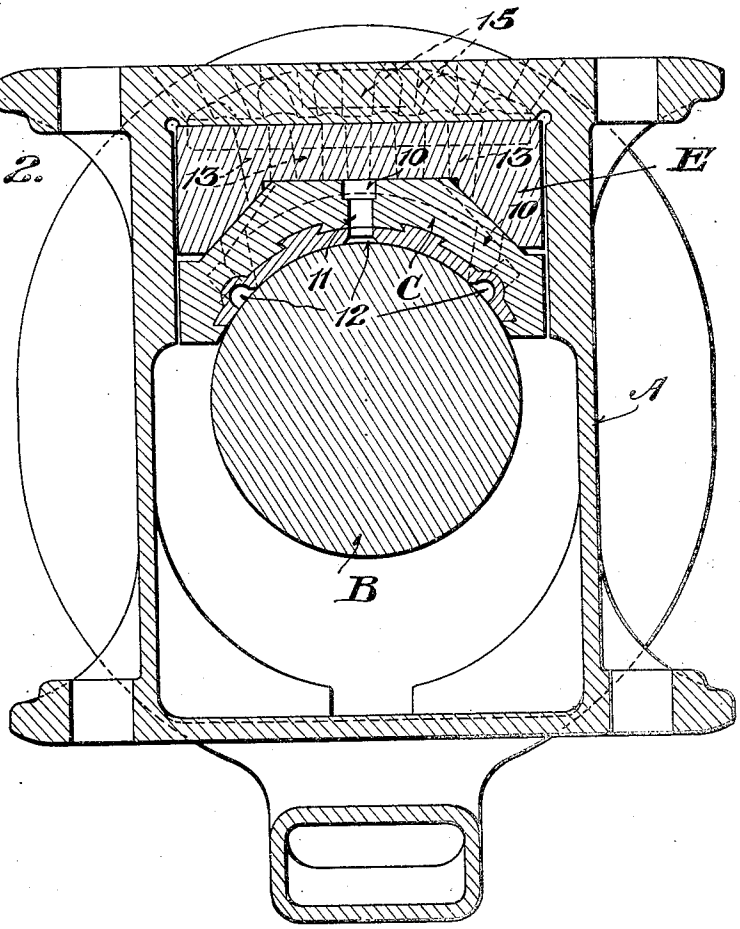
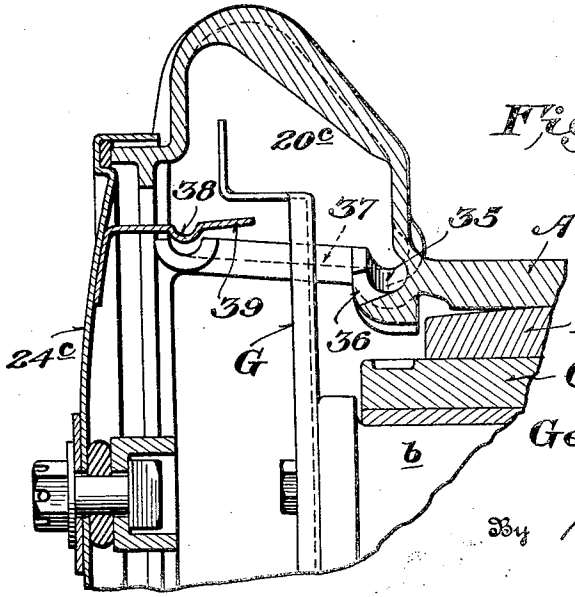


Fig. 6.



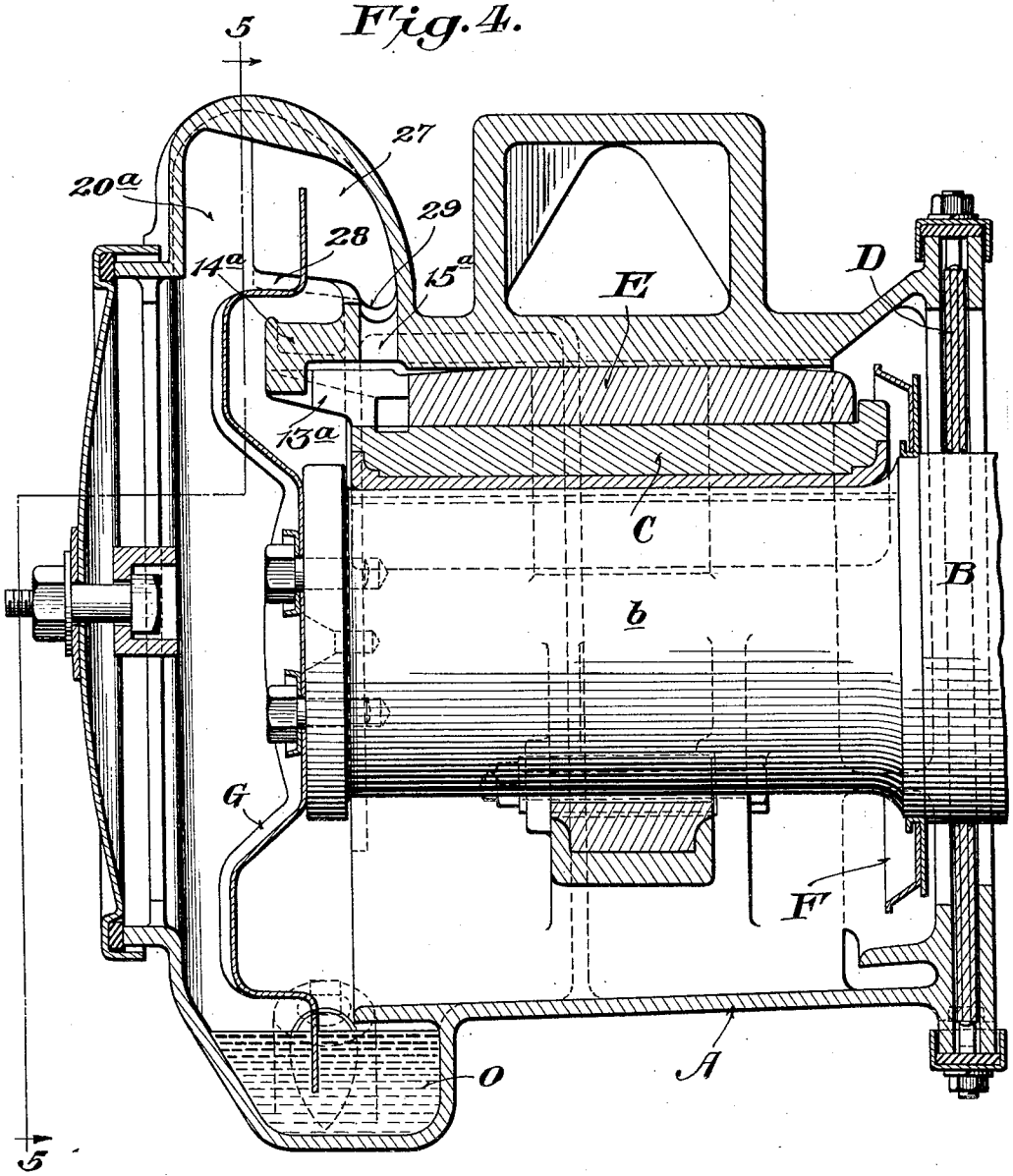
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MEANS FOR COLLECTING AND FEEDING OIL TO JOURNAL BEARINGS

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Fig. 4.



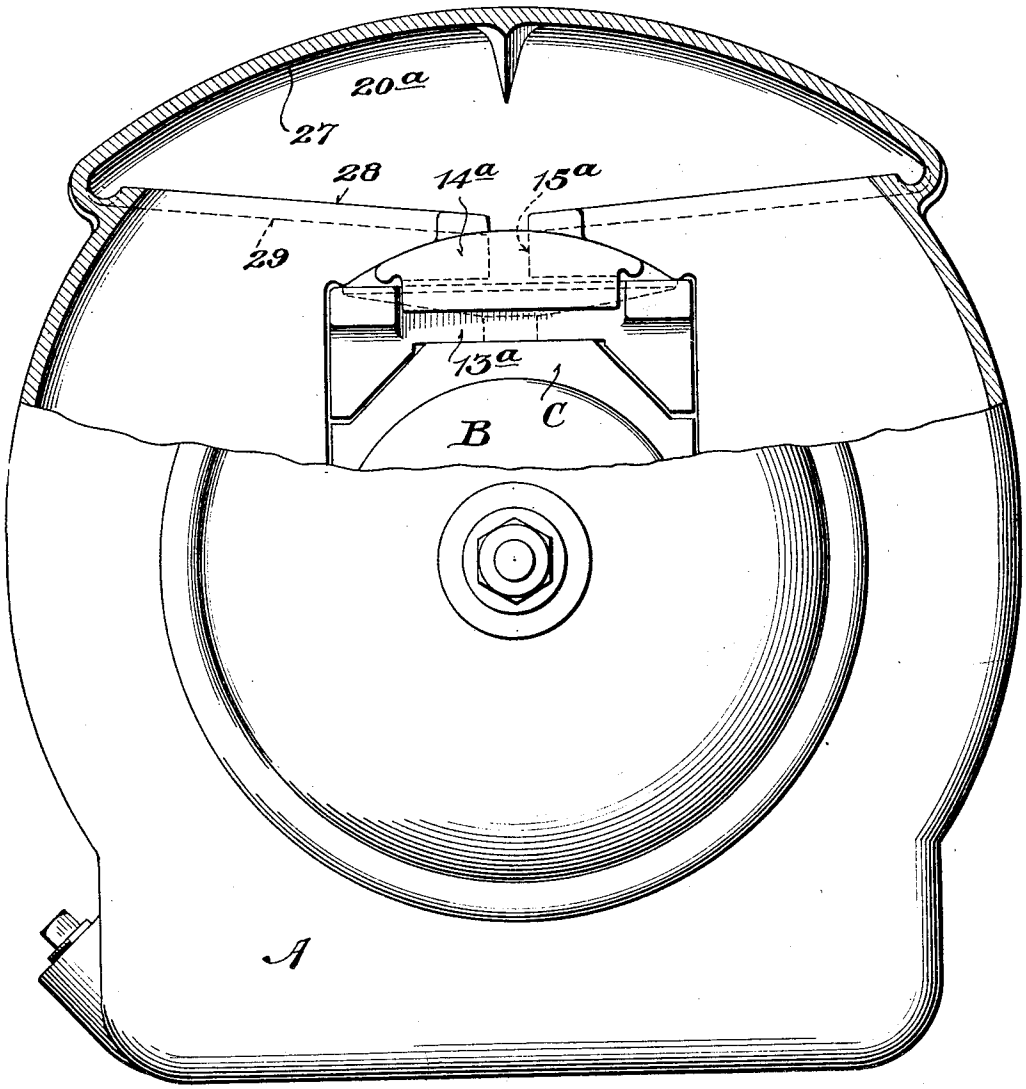
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Fig. 5.



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Patented Apr. 25, 1933

1,905,281

UNITED STATES PATENT OFFICE

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MEANS FOR COLLECTING AND FEEDING OIL TO JOURNAL BEARINGS

Application filed July 24, 1930. Serial No. 470,522.

This invention relates to journal boxes of the general type in which lubrication of an associated axle journal and its bearing is adapted to be effected by means of a paddle or its equivalent mounted on the axle for rotation therewith so as to dip into oil contained in the journal box and thus deliver oil to the journal and the bearing.

Heretofore, the usual practice in automatically lubricating journal boxes of the type mentioned has been to shape the paddle and to construct and arrange the bearing so that the ends of the paddle, during its rotation pass over the end of the bearing to deliver oil to suitable distributing channels or ducts formed in the latter

While the foregoing general arrangement has proven entirely adequate insofar as effecting the required supply of oil to the bearing and the journal is concerned, nevertheless it has been found that the usual prior arrangement of the paddle and bearing may be considerably improved, particularly from an economical manufacturing and assembly standpoint, by providing an arrangement which does not require the ends of the paddle to pass over the ends of the bearing.

Accordingly, the general object of the present invention is to provide means whereby an oil elevating paddle attached to an axle may be enabled to effect an adequate supply of oil to the axle bearing without requiring the ends of the paddle to pass over the bearing, and without requiring a bearing specially constructed to underlie the path of travel of the ends of the paddle.

Another object of the invention is to provide means of the character stated which may be embodied in different ways in a journal box in an extremely simple, inexpensive manner, and which is entirely reliable and efficient in operation.

With the foregoing and other objects in view, the invention consists in the novel features of construction, combination and arrangement of parts as will be hereinafter more fully described, illustrated in the accompanying drawings and defined in the appended claim.

In the drawings, wherein like characters of reference denote corresponding parts in the different views:—

Fig. 1 is a central, longitudinal section through a journal box and bearing constructed according to one embodiment of the present invention, the axle with an attached oil elevating paddle being shown operatively associated with the box and the bearing.

Fig. 2 is a transverse section taken approximately on the line 2—2 of Fig. 1.

Fig. 3 is a detail section on the line 3—3 of Fig. 1.

Fig. 4 is a view similar to Fig. 1 illustrating another embodiment of the invention.

Fig. 5 is a section on the line 5—5 of Figure 4.

Fig. 6 is a fragmentary view similar to Figs. 1, 3 and 4 illustrating still another embodiment of the invention.

In each of the figures of the drawings the journal box is designated generally as A, the axle as B and the bearing as C, moreover, as usual, the bearing C is disposed in each instance in the top portion of the box, and the journal *b* of the axle B seats or is journaled against the under side of said bearing, the axle extending through an opening in the rear end of box and being surrounded by a dust guard D to exclude foreign matter from the box. Furthermore, according to each of the embodiments of the invention illustrated in the drawings, a wedge E is shown interposed between the bearing C and the top of the box A, but it will be understood that the use of a wedge is optional and that, if desired, same may be eliminated. Further still, it will be noted that according to each embodiment of the invention and obturating ring F is mounted on the axle B between the rear end of the bearing C and the dust guard D to prevent loss of oil from the box through the axle admission opening in the rear of the box; also, that a paddle G is secured to the outer end of the axle adapted, during rotation of the axle to dip into a body of oil O contained in the bottom of the box, thus to effect elevation of oil to the bearing C. In this connection it is, of course, within the purview of the invention to mount the pad-

dle G to elevate oil from the rear end instead of from the front end of the box A to effect delivery of oil to the rear end of the bearing C instead of to the front end thereof.

Referring now particularly to the embodiment of the invention illustrated in Figs. 1 to 3, of the drawings, it will be observed that the bearing C is provided in its upper face with oil receiving channels 10 which are in communication through ducts 11 with oil distributing grooves 12 formed in the under or bearing surface of the bearing, and that the wedge E has formed therethrough oil passages 13 which open through its upper face of the wedge and at the under face thereof is in oil discharging relation to said channels 10, whereby oil delivered to said passage will flow therethrough into said channels 10 for distribution by the grooves 12 to the journal *b* and the bearing surface of the bearing.

According to the foregoing arrangement there is formed either integrally with, or separate from and suitably secured to the box A, a ledge or shelf 14 which extends forwardly from a point above the wedge E beyond the forward end of the latter and also beyond the forward end of the bearing C, and has formed therethrough one or a plurality of passages 15 leading from its upper face to the passage or passages 13, as the case may be, in the wedge E. Thus, oil delivered to the upper face of said ledge or shelf will gravitate through the passage or passages 15 into the passage or passages 13 in the wedge and thence be delivered to the channels 10 in the bearing for distribution by the grooves 12.

The paddle G is inclusive of one or more blades directed first outwardly from the end of the axle as at 16, thence radially outward as at 17, thence inwardly as at 18 and again radially outward as at 19, whereby said last mentioned radial portion is adapted to pass over the ledge or shelf 14 during rotation of the axle, as is manifest. Thus, as the outer end portion of each blade travels through the lower arc of its circular movement it dips into the oil O and by adhesion a certain amount of oil is carried upwardly therewith for delivery to the shelf 14. Depending upon the rate of speed of the axle B, this oil may drip from the end of the paddle onto the shelf 14 as the end of the paddle passes over said shelf, or the oil may be thrown by centrifugal force against the top and sides of the chamber 20 at the front of the box A within which the paddle rotates. In this connection it will be noted that in order to direct oil that may be thrown against the upper walls of the chamber 30 into the passage or passages 15, the rear wall of said chamber, above the shelf 14, is provided with ribs 21 forming grooves 22 which lead to said passage or passages, while the top wall of said chamber is formed with a central web 23 against which oil thrown by the paddle G is adapted to impinge, whereby such oil will be directed to the grooves 22.

In the front of the box A is formed an opening to afford access to the interior of the box. Normally this opening is closed by a cover 24, and on the inner face of said cover there preferably is provided a downward and inwardly directed ledge 25 for directing any oil which may flow down the inner face of the cover away from the lower portion of the joint between the box and the cover into the oil well at the bottom of the chamber 20.

Obviously, in the event the wedge E is not used in the embodiment of the invention just described, oil would be delivered from the passage 15 in the ledge 14 directly into the channels 10 in the top of the bearing. In this connection it will be noted that at the top of said opening the box A is provided with a downwardly directed lip 26 having an oil drip edge disposed inwardly of the joint between the cover and the box, whereby any oil flowing down the inner face of the outer wall of the chamber 20 will be directed back to the well in the bottom of said chamber and will be prevented from reaching said joint at the top thereof.

Referring now to the embodiment of the invention illustrated in Figs. 4 and 5 of the drawings, it will be observed that the structural arrangement is, in general, quite similar to the arrangement illustrated in Figs. 1 to 5 of the drawings, the important difference residing in the oil receiving means at the top of the chamber 20*a*. That is to say, a shelf or ledge 14*a* is provided on the box A to extend forwardly beyond the forward end of the bearing C, as in the embodiment of the invention first described, and to overlie the forward end of the wedge E. Through the wedge E is formed a passage or passages 13*a* in oil discharging relation to channels formed in the upper face of the bearing C, and through the shelf or ledge 14*a* is formed a passage 15*a* in oil discharging relation to the passage or passages 13*a* in the wedge. However, according to this embodiment of the invention, pockets 27 are formed in the upper side walls of the chamber 20*a* and the lower walls of these pockets are constituted by troughs 28 which extend rearwardly at a downward inclination and join other troughs 29 formed in the rear wall of said chamber, which troughs 29 extend inwardly at a downward inclination and lead to the passage 15*a*. Thus, oil thrown by the paddle G against the walls of the pockets 27 will gravitate down said walls into the troughs 28 and flow through said troughs

into the troughs 29 and thence to the passage 15*a* from which point the oil will be delivered to the bearing for distribution in the manner heretofore described in connection with Figs. 1 to 3 of the drawings. On the other hand, the top of the shelf 14*a*, outwardly of the passage 15*a*, is recessed to receive any oil which may drip from the paddle, and said recess opens at a suitable point or points through the bottom of the shelf into a suitable channel or channels in the wedge leading to the bearing.

According to the embodiment of the invention illustrated in Figure 6 of the drawings, a trough 35 is formed on the rear wall of the chamber 20*c* above the bearing C and extends inwardly at a downward inclination towards the transverse center of the box where it is provided with an outlet opening 36 disposed above the end of the axle B outwardly of the end of the bearing C so that oil will be delivered therefrom directly onto the journal *b*. At its ends, this trough 35 communicates at each end with a trough 37 formed on the respective side walls of the chamber 20*c*, these troughs 37 extending to the front wall of said chamber and being in oil receiving relation to the ends of a trough 38 formed in a shelf or ledge 39 which extends inwardly from the cover 24*c* provided to close the front end of the box. The ends of the paddle G in this instance are directed outwardly so as to pass over said shelf 39. Thus, any oil which may drip from the paddle onto the shelf 39 will be directed by said shelf into the troughs 37, and any oil which may be thrown against the upper portions of the side walls of the chamber 20*c* will gravitate into said troughs, from which it will be delivered through the opening 36 to the journal in a manner which is apparent.

Only one trough 37 is illustrated in Fig. 6, but it will be understood that the structure shown is duplicated at the other side of the box.

Without further description it is thought that the features and advantages of the invention will be readily apparent to those skilled in the art and it will of course be understood that changes in the form, proportion and minor details of construction may be resorted to, without departing from the spirit of the invention and scope of the appended claim.

I claim:—

In combination, a journal box, a bearing therein, an axle journaled against said bearing, a shelf formed on the box above said bearing and extending outwardly beyond the end of the latter, a paddle carried by said axle to dip into oil contained in the bottom of the box and to deliver it to said shelf, said paddle having an end portion arranged to pass over said shelf, and means for conducting oil from said shelf to said bearing.

In testimony whereof I hereunto affix my signature.

GEORGES GRANDJEAN.