Dec. 8, 1931. G. DUFFING 1,835,851

OIL PUMP

Filed April 26, 1928

Fig. 1

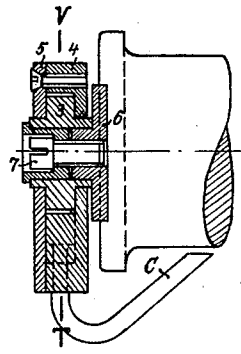


Fig. 2

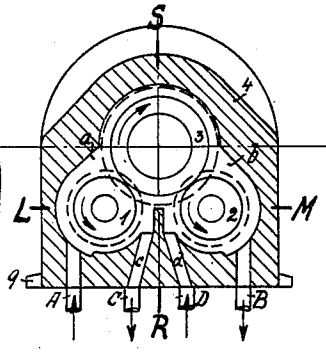


Fig. 4.

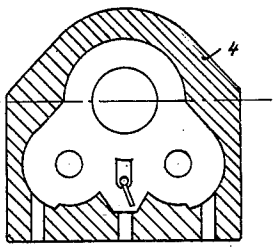


Fig. 3.

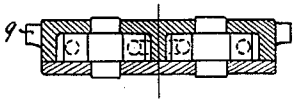
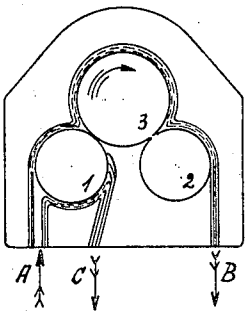


Fig. 5.



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UNITED STATES PATENT OFFICE

GEORG DUFFING, OF HAMBURG, GERMANY

OIL PUMP

Application filed April 26, 1928, Serial No. 273,111, and in Germany May 6, 1927.

This invention relates to the lubrication of journal bearings and more particularly of car axles.

One of the objects of the invention is to simplify the construction of the pumping mechanism and to simplify the driving connection for such devices.

Another object of the invention is to provide a construction comprising few parts and also a construction which may be easily and quickly detached from the journal, taken apart and reassembled.

The principal object of the invention is finally to have a full lubrication when the journal is rotating in the forward direction and likewise in the reverse direction.

The following description in connection with the drawings which form a part of this application, will give an understanding of the invention.

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

Figure 2 is a transverse section rectangular to the axle taken on line T—V of Fig. 1;

Figure 3 is a horizontal transverse section taken on line L—M of Fig. 2;

Figure 4 is a view in vertical section of the casing for the pumping mechanism showing a modification of the delivery openings;

Figure 5 is a schematic view illustrating the operation of the device.

The pumping mechanism consisting of the gears 1, 2 and 3 is mounted in the casing 4 with the cover 5, the primary gear 3 meshing with the idler gears 1 and 2. The gear 3 is positively driven by the projection 6 of the journal to be lubricated.

When the gear 3 is rotating in the clockwise sense as in Fig. 2, then the conduit *a* is a suction space, the conduit *b* is a pressure space and the conduit *c* is a delivery space. The pipes A and B are in connection with a supply tank or reservoir (not shown) and the pipes C and D extend close by the surface of the journal (Fig. 1). The oil coming from the suction pipe A flows partly to *c* and the delivery pipe C; and the remaining part, driven to *b* by the gear 3, flows to the supply tank through the pipe B. The air coming from pipe D escapes through B. The flow of the oil corresponds to the scheme as shown in Fig. 5.

The exhaust chambers are bounded partly by the periphery of the primary gear, partly by the periphery of one idler gear and partly by the wall of the casing common to both exhaust chambers, thus allowing an easy switching from every exhaust chamber to a common exhaust passage by the aid of a movable pivoted web, only effected by the exhaust pressure and not sensible against impurities of the liquid.

When the gear 3 is rotating in the anticlockwise sense, then pipe B in Fig. 2 constitutes a suction pipe and D constitutes a delivery pipe.

The gear 3 is fixed to the projection 6 of the journal to be lubricated by the screw 7. The pump casing (4, 5 Fig. 1) rides on the hub of the gear 3 and is prevented from rotation by projections 9 propping against the walls of the axle box or the like. The entire apparatus, however, is supported by the journal only.

A modification of the apparatus is shown in Fig. 4 according to which the spaces *c* and *d* of Fig. 2 are united and connected with one delivery opening only. The valve 8 provides for the delivery of the whole of the oil discharged by the gears 3—1 or 3—2 at their meshing point goes to the delivery opening.

Having described my invention, what I claim and desire to secure by Letters Patent is:—

Lubricant pumping mechanism comprising, in combination a pump casing having a positively driven primary gear arranged therein, idler gears meshing with the first mentioned gear, intake chambers bounded

by the wall of the casing and the peripheries of the positively driven gear and one idler gear and exhaust chambers bound partly by the periphery of the primary gear, partly by the periphery of one idler gear and partly by the wall of the casing, a pivoted web bounding the two exhaust chambers and adapted to ensure an easy switching from every exhaust chamber to a common exhaust passage, whereby the lubricant may be driven out in the same sense independently of the sense of rotation of the primary gear.

In testimony whereof I affix my signature.

GEORG DUFFING.