

PATENT SPECIFICATION

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307,650

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PROVISIONAL SPECIFICATION.

Lubricator for use on Rotating Parts.



We, THE ALVIS CAR & ENGINEERING COMPANY LIMITED, a British Company, GEORGE THOMAS SMITH-CLARKE, a British Subject, and WILLIAM MARSHALL DUNN, a British Subject, all of Holyhead Road, Coventry, Warwickshire, do hereby declare the nature of this invention to be as follows:—

This invention relates to a lubricator for use on rotating parts, and its principal object is to provide simple and effective means for supplying liquid lubricant to points on or adjacent the axis of the rotating part without difficulties arising from centrifugal force.

According to this invention a lubricant container is provided on or in the end of the rotating part, preferably surrounding its axis, and by means of a wick or wicks within it the lubricant is conveyed by capillary action to a passage leading from the container to the point to be lubricated in the rotating part.

Thus the lubricant, although flung outwardly to the periphery of the container as the latter rotates, is nevertheless effectively fed inwardly by the capillary action of the wick, and thereafter can travel outwardly to lubricate other points in the rotating parts for which suitable ducts are provided.

One embodiment of the invention hereunder described is particularly intended for the lubrication of a universal joint for driving the steerable wheel of a motor vehicle as described in our co-pending Application No. 11,306/28.

In this the driving shaft enters a recess in the inner end of the rotatable stub axle of the wheel, the end of the shaft being part-spherical and provided with a transverse pin carrying at each end a ball slidably and rotatably mounted thereon. These balls engage in longitudinal bores in the stub axle to transmit the driving torque, and obviously require lubricant on their working faces. Also the shaft is

positioned endwise by spring thrust so that the ball end abuts an adjustable stop to bring its centre coincident with the steering axis of the wheel.

A cylindrical lubricant container therefore is screw threaded into a recess in the outer end of the stub axle, and preferably its inner end is reduced or tapered, and its bore also. Its small end face is made concave to abut and form a stop for the ball end of the driving shaft and is adjustable owing to the screw threading of the container in the shaft.

In the concave end is a duct communicating with the interior of the container, and the end of the duct towards the driving shaft is counterbored to provide a space for a knot formed in the end of a wick (or wicks) extending through the duct into the container. The latter can be charged with the liquid lubricant through a removable cap or plug at its outer end.

The foregoing arrangement provides for a capillary flow of lubricant to the thrust face of the ball on the driving shaft, and by forming ducts therein and grooves on the transverse pin the lubricant, aided by centrifugal force, can flow to the working surfaces of the balls thereon, and to other associated parts.

The lubricant container in this example serves also for the adjustable stop, but it is to be understood that its use is not limited to the above described mechanism and that in some cases the container might be constituted by a recess in the end of the rotating part, or alternatively, when separately formed, it could be fixed to the end face thereof.

Dated this 16th day of April, 1928.

ERIC W. WALFORD,

Fellow of the Chartered Institute of Patent Agents,

19, Hertford Street, Coventry,
Agent for the Applicants.

COMPLETE SPECIFICATION.

Lubricator for use on Rotating Parts.

We, THE ALVIS CAR & ENGINEERING COMPANY LIMITED, a British Company, [Price 1/-]

GEORGE THOMAS SMITH-CLARKE, a British Subject, and WILLIAM MARSHALL DUNN, a

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British Subject, all of Holyhead Road, Coventry, Warwickshire, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

This invention relates to lubricators for use on rotating parts, and it has for its object to provide a simple form of lubricator for use where two parts rotate together but have relative motion.

According to this invention, the lubricator comprises a lubricant container in one rotating part and a wick conveying the lubricant from the container to the point where the relative motion takes place.

After lubricating that point, lubricant may be led by centrifugal force to other points which require lubrication.

One embodiment of the invention illustrated in the accompanying part sectional elevation is particularly intended for the lubrication of a universal joint for driving a steerable wheel of a motor vehicle as described in our co-pending Application No. 11,308/28.

In this the driving shaft 2 enters a recess 3 in the inner end of the rotatable stub axle 4 of the wheel 5, the end of the shaft being part-spherical at 6 and provided with a transverse pin 7 carrying at each end a ball 8 slidably and rotatably mounted thereon. These balls engage in longitudinal bores or grooves 9 in the stub axle to transmit the driving torque, and obviously require lubricant on their working faces.

Also the shaft 2 is positioned endwise by spring thrust so that the part-spherical end 6 abuts an adjustable stop hereunder described to bring its centre coincident with the steering axis of the wheel.

A cylindrical lubricant container 10 therefore is screw-threaded at 11 into a recess 12 in the outer end of the stub axle 4, and preferably its inner end 13 is reduced or tapered, and its bore also, as shown. Its small end face 14 is made concave to abut and form a stop for the part-spherical end 6 and is adjustable owing to the screw-threading of the container in the stub axle.

In the concave end 14 is a duct 15 communicating with the interior of the container, and the end of the duct towards the driving shaft is counterbored at 16 to provide a space for a knot 17 formed in the end of a wick 18 (or wicks) extending through the duct into the container. The latter can be charged with the liquid lubricant through an aperture 19 at its outer end, which can be closed by a removable cap or plug 20.

The foregoing arrangement provides for a capillary flow of lubricant to the thrust face of the part-spherical end 6, and by forming passages such as 21 therein and grooves 22 on the pin 7 the lubricant, aided by centrifugal force, can flow to the working surfaces of the balls 8 thereon, and to other associated parts.

It is to be understood that the use of the lubricant container is not limited to the above described mechanism as, in some cases, the container might be constituted by a recess in the end of the rotating part, or alternatively, when separately formed, it could be fixed to the end face thereof.

Having now particularly described and ascertained the nature of our said invention and in what manner the same is to be performed, we declare that what we claim is:—

1. A lubricator for use where two parts rotate together but have relative motion, comprising a lubricant container in one rotating part and a wick conveying the lubricant from the container to the point where the relative motion takes place.

2. A lubricator as claimed in Claim 1, in which lubricant in a container provided at the end of, and revolving with, one rotating part is fed inwardly to a point on or near to the axis of the latter against the action of centrifugal force by a wick or wicks and is thereafter distributed radially to points in the other rotating part.

3. For a universal joint driving a steerable wheel of a motor vehicle, a lubricator as claimed in either of the preceding Claims, in which the lubricant container is screw-threaded into a recess in the stub axle and engages the end of a driving shaft constituting a part of the universal joint.

4. A lubricator as claimed in Claim 3, in which the end of the container engaging the drive shaft is provided with a duct communicating with the interior of the container, and a counterbore in the end of the duct adjacent the driving shaft provides a space for a knot formed in the end of a wick (or wicks) extending into the container, substantially as described.

5. A lubricator as claimed in Claim 3 or Claim 4, in which the container forms an adjustable stop for the end of the driving shaft, substantially as and for the purpose described.

6. A lubricator as claimed in Claim 3 or Claim 4, in which the end of the driving shaft engaging the container is provided with passages, such as 21, communicating with the container and with grooves, such as 22, in a pin extending therethrough adapted to lead lubricant to

balls, such as 8, on the pin, substantially as described.

5 7. A lubricator as claimed in any of the preceding claims, in which the container is charged with liquid lubricant through an aperture at its outer end which is closed by a removable cap or plug, substantially as described.

10 8. A lubricator as claimed in Claim 1 or Claim 2, in which the container is constituted by a recess in the end of the rotating part.

9. A lubricator as claimed in Claim 1

or Claim 2, in which a separately formed container is fixed to the end face of the rotating part. 15

10. The complete lubricator for use on a rotating part, substantially as described or as illustrated in the accompanying drawing. 20

Dated this 3rd day of January, 1929.

ERIC W. WALFORD,

Fellow of the Chartered Institute of Patent Agents,

19, Hertford Street, Coventry,
Agent for the Applicants.

[This Drawing is a reproduction of the Original on a reduced scale.]

