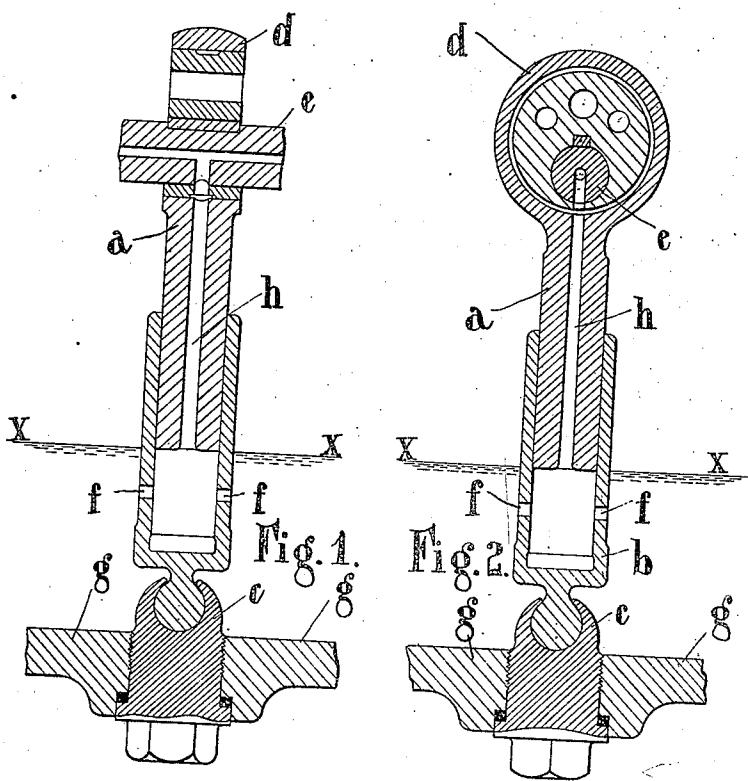


G. CONSTANTINESCO,  
MEANS FOR LUBRICATING INTERNAL COMBUSTION ENGINES,  
APPLICATION FILED FEB. 11, 1919.

1,428,682.

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INVENTOR

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## UNITED STATES PATENT OFFICE.

GEORGE CONSTANTINESCO, OF WEYBRIDGE, ENGLAND.

## MEANS FOR LUBRICATING INTERNAL-COMBUSTION ENGINES.

Application filed February 11, 1919. Serial No. 276,342.

(GRANTED UNDER THE PROVISIONS OF THE ACT OF MARCH 3, 1921, 41 STAT. L., 1313.)

*To all whom it may concern:*

Be it known that I, GEORGE CONSTANTINESCO, a subject of the King of Great Britain, residing at "Carmen Silva," Beechwood 5 Avenue, Oakland Park, Weybridge, in the county of Surrey, England, formerly of "Westoe," Stanley Avenue, Alperton, in the county of Middlesex, England, have invented certain new and useful Improved Means 10 for Lubricating Internal-Combustion Engines (for which I have filed an application in England March 21, 1918, Patent Number 131,020), of which the following is a specification.

15 The present invention relates to the forced lubrication of internal combustion and other engines.

20 The invention consists in pumping the oil from an oil reservoir into the system to be lubricated by a valveless pump comprising a piston reciprocated by an eccentric on the crank shaft and provided with a longitudinal aperture through which the oil is pumped to the system to be lubricated.

25 The invention further consists in the improved means for forced lubrication herein-after described.

Referring to the accompanying drawings:—

30 Figure 1 is a section in a plane through the axis of the crank shaft showing the oil pump; while

Figure 2 is a section at right angles to Figure 1.

35 In the form of the invention illustrated, the pump consists of an axially perforated piston *a* working in an oscillating cylinder *b* mounted in a ball and socket joint *c* in the crank case *g* of the engine; the piston is reciprocated by the eccentric *d* on the shaft *e*. 40 Oil is contained in the crank case to the level X—X and enters the cylinder through the apertures *f*.

It is found that with a pump of 15 mm. 45 diameter and 15 mm. stroke and a length of column 120 mms. in the passage *h* in this piston, an oil pressure of  $\frac{2}{3}$  ats. is reached at the shaft *e* when the speed of the pump is 1500 revolutions per minute.

50 The operation of the above-described apparatus is as follows:—

On the rapid descent of the piston towards the lower end of the cylinder the flow of oil takes place upwardly in the passage *h*.

The apertures *f* not being closed a certain portion of the oil is forced out through them. The length of the column in the passage *h*, however, is sufficient to cause the inertia of the liquid moving upwards in the passage *h* to draw in oil through the apertures *f* and the flow of oil will continue inwards through the apertures *f* and up the passage *h* during the return movement of the piston. In this manner a practically continuous stream of oil is forced through the lubrication passages of the engine.

The plunger *a* in moving downwards causes liquid to flow up the passage *h* and the inertia of this column of liquid causes a vacuum behind the plunger during the latter's rapid upward movement. Consequently more liquid is drawn in and the stream of oil is continually forced through the passage *h* by the inertia of the column of liquid which has already started in motion. It should be observed that owing to the diameter of the eccentric the piston *a* travels almost to the bottom of the cylinder and closes the ports *f* so as to ensure of the foregoing operation.

It is found that the length of the axial passage in the piston from the eccentric to the lower end of the piston will provide a column of sufficient inertia to keep up an efficient circulation of oil.

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

1. A lubrication device giving a continuous delivery consisting of a valveless inertia operated pump comprising an oscillating cylinder having its lower end immersed and oiled and provided with openings permitting of the passage of oil into the cylinder, a crank shaft, an eccentric on the crank shaft, a piston operably connected with the eccentric so as to be reciprocated in the cylinder for closing the openings in the cylinder on its downward stroke and being provided with a longitudinal passage way through which oil is pumped to the system to be lubricated substantially as described.

2. Means giving a continuous delivery for lubricating internal combustion engines comprising a pivot on the crank case of the engine, a cylinder oscillating about the pivot and being immersed and oiled and provided with openings near its lower end permitting

of the passage of oil into the cylinder, an eccentric on the crank shaft of the engine, a piston operating in the cylinder and operably connected about the eccentric on the 5 crank shaft so as to be reciprocated during the rotation of the crank shaft, the piston being designed to close the openings in the cylinder on its downward stroke and being provided with a longitudinal passage way 10 through which the oil is pumped to the system to be lubricated and the pumping being effected by the inertia of the liquid column in the piston.

3. A lubrication device comprising in

combination a piston having a continuously 15 open delivery duct therethrough, a cylinder having an admission port overrun by said piston and means for reciprocating said piston in said cylinder, the position of said port being at an intermediate point of the stroke 20 of said piston such that the latter overruns it when moving at high velocity, whereby above a certain speed the inertia of the column of liquid in said delivery duct ensures a continuous delivery, as set forth. 25

In testimony where of I have signed my name to this specification.

GEORGE CONSTANTINESCO.