

R. DELAUNAY-BELLEVILLE.
LUBRICATING SYSTEM FOR INTERNAL COMBUSTION ENGINES.
APPLICATION FILED DEC. 9, 1912.

1,175,720.

Patented Mar. 14, 1916.

Fig.1.

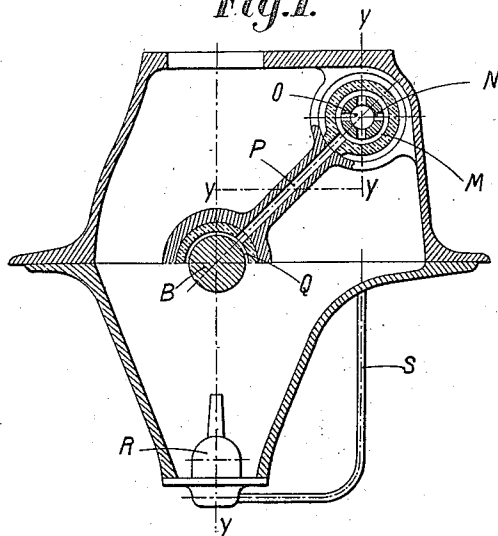
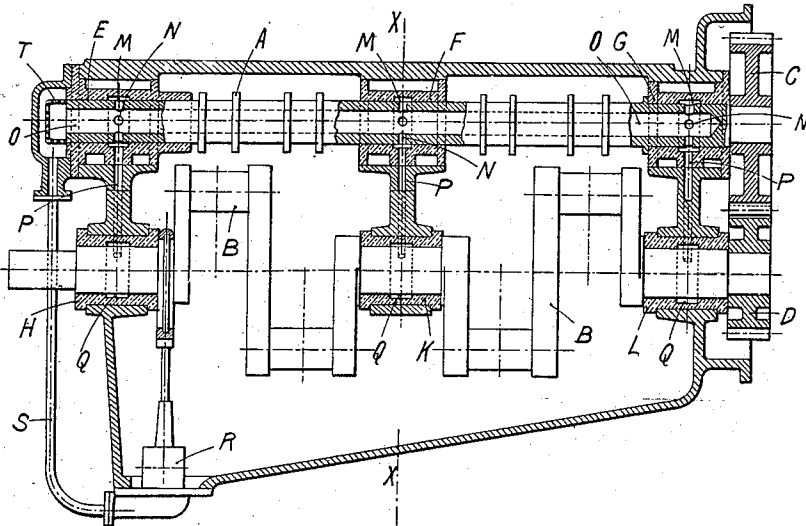


Fig.2.



Witnesses.

E. C. Schuermauer.

[Signature]

Inventor.

Robert Delaunay-Belleville
by *[Signature]*
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UNITED STATES PATENT OFFICE.

ROBERT DELAUNAY-BELLEVILLE, OF ST.-DENIS, FRANCE, ASSIGNOR TO SOCIÉTÉ ANONYME DES AUTOMOBILES DELAUNAY-BELLEVILLE, OF ST.-DENIS, FRANCE, A CORPORATION OF FRANCE.

LUBRICATING SYSTEM FOR INTERNAL-COMBUSTION ENGINES.

1,175,720.

Specification of Letters Patent.

Patented Mar. 14, 1916.

Application filed December 9, 1912. Serial No. 735,836.

To all whom it may concern:

Be it known that I, ROBERT DELAUNAY-BELLEVILLE, citizen of the French Republic, residing at St.-Denis, Department of the Seine, in France, have invented certain new and useful Improvements in Lubricating Systems for Internal-Combustion Engines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

A device for forced lubrication has been described in the Patent No. 817,629 of April 10, 1906, in which oil under pressure is distributed by a collector extending from the delivery side of the pump to the parts to be lubricated. This collector may be bored either in the casing itself or may consist of a pipe fitted in the casing or may be formed by an independent pipe.

According to the present invention this collector is constituted by one of the camshafts controlling the distribution of the motor; said camshaft being made hollow for that purpose. Oil is admitted at one end or more generally at any suitable point and is distributed by means of its journals and of passages suitably arranged in conjunction with the different parts to be lubricated.

The accompanying drawing illustrates a device, embodying the invention, as applied to a four-cylinder motor.

Figure 1 is a vertical cross-section on the line X—X of Fig. 2. Fig. 2 is a vertical cross-section on the line Y—Y—Y—Y of Fig. 1.

A is the camshaft driven by the crankshaft B by means of the gears C and D. The camshaft has been bored in O along all its length and is designed to perform the work of an oil collector. The journals E, F and G of the shaft A are assumed to be three in number corresponding to the bearings H, K and L of the crankshaft B.

Each of the journals of the camshaft comprises a circular chamber M which communicates with a corresponding circular

chamber Q in each of the bearings of the crankshaft, by means of a passage P drilled in the engine casing itself. The interior of the hollow camshaft A communicates with the chamber M by means of orifices N.

R is a pump of any type which draws up oil either from the interior or exterior of the casing. S is a delivery pipe, T is a strainer designed to retain all impurities contained in the oil.

The device operates in the following manner: The oil is continuously pumped into the collector O of the camshaft by means of the oil pump R and the intermediary of the pipe S and strainer T; said collector communicating with circular chambers M of the journals E, F and G by means of the orifices N drilled in the camshaft. By means of suitably arranged oil grooves, these journals are well lubricated and the excess of oil reaches, through the passages P, the chambers Q of the bearings H, K and L of the crankshaft. The bearings of the crankshaft are in turn lubricated and the excess of oil can pass through the crankshaft, when a passage or conduit is provided therein for that purpose, and thus lubricate the connecting rod heads. The oil pump illustrated is represented as of the reciprocating type driven off the crankshaft by an eccentric but it is evident that it may be of any type and may be driven in any suitable manner. This new arrangement of the collector on the delivery side of the pump, presents the minimum number of exterior pipes exposed to vibrations and breakage; it also presents the minimum number of channels bored in the thickness of the casing walls or webs, channels which are very often defective owing to flaws caused by the vibrations of the motor.

I claim:

The combination with the crank shaft of an engine, of a cam shaft having a longitudinal lubricant passage passing there-through, a plurality of bearings for said cam shaft each having a circular lubricant recess encircling the cam shaft, said cam shaft having a radial passage at each bear-

ing to permit passage of lubricant from the interior of the cam shaft to the recess of such bearing, a passage for each of said circular recesses to conduct lubricant there-
5 from to the bearings of the crank shaft, and means to supply lubricant to the passage of said cam shaft and to force it therethrough.

In testimony whereof I affix my signature, in presence of two witnesses

ROBERT DELAUNAY-BELLEVILLE.

Witnesses:

HANSON C. COXE,
LOUIS LOSSE.