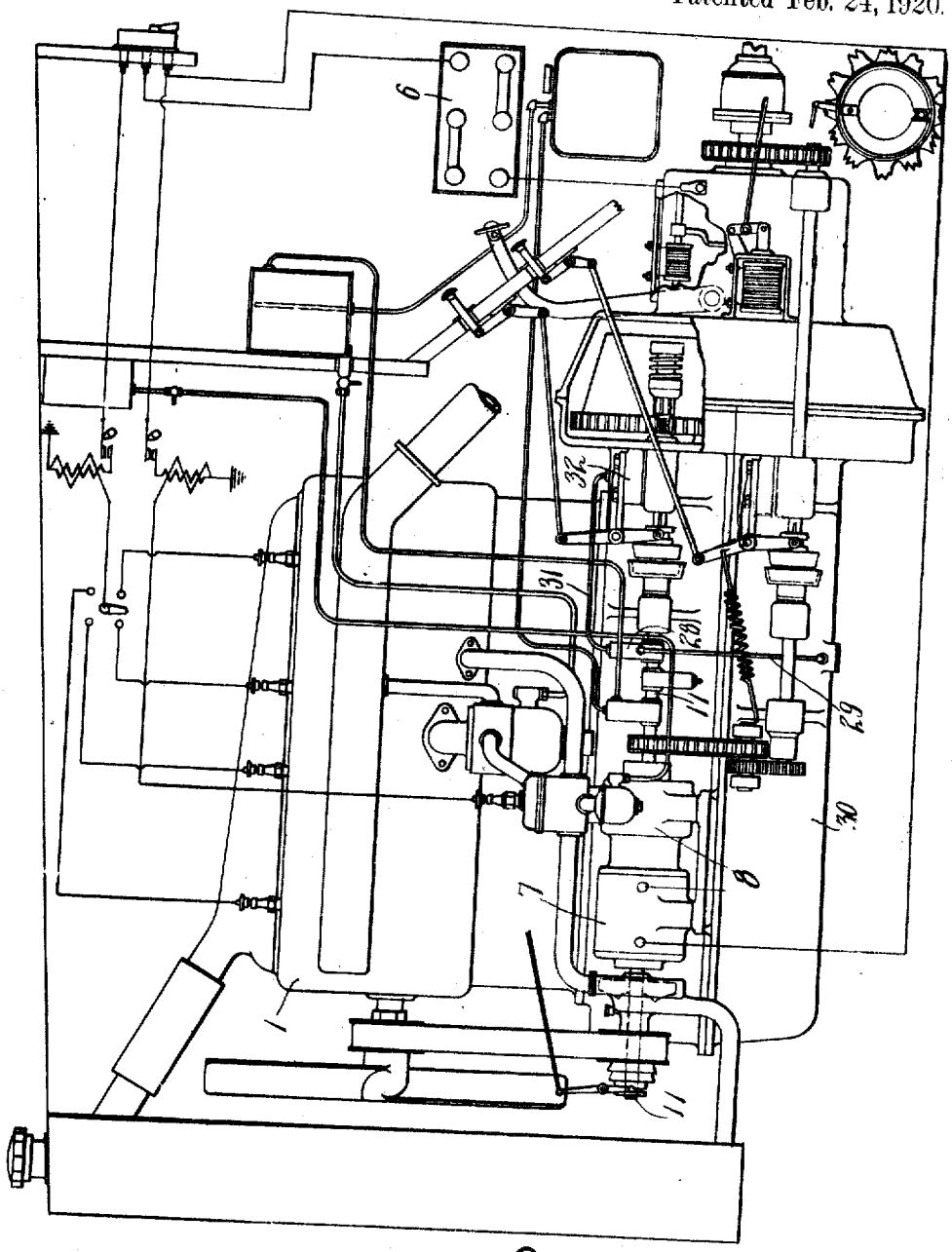
J. O. HEINZE.

LUBRICATING SYSTEM.

APPLICATION FILED FEB. 14, 1918.

1,331,765.

Patented Feb. 24, 1920.



INVENTOR.

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LUBRICATING SYSTEM.

1,331,765. Specification of Letters Patent. Patented Feb. 24, 1920.

Original application filed November 4, 1916, Serial No 129,540. Divided and this application filed February 14, 1918. Serial No. 217,287.

To all whom it may concern:

Be it known that I, JOHN O. HEINZE, a citizen of the United States, residing at Lowell, Middlesex county, and State of Massachusetts, have invented and discovered certain new and useful Improvements in Lubricating Systems, of which the following is a specification.

My invention relates to a lubricating system for internal combustion engines and consists in the combinations and arrangements of elements hereinafter described and particularly set forth in the accompanying claims.

The invention has for its purpose to provide a lubricating system for a power plant or unit embodying a main engine and an auxiliary engine which are operable simultaneously or independently, and in which the auxiliary unit serves as a starting medium for the main engine, and the operation of the auxiliary engine serves to circulate the lubricant at a uniform flow to the main engine, the auxiliary engine, and to all working parts associated therewith. And wherein the said lubricant is constantly fed independently of any variation in the speed of the main engine.

The invention forms a division of the subject matter disclosed in my co-pending application for U. S. patent entitled Auxiliary power system for internal combustion engines, Serial No. 129,540, and dated November 4, 1916.

The invention is disclosed by way of illustration in the accompanying drawing which shows a side elevational view of the main and auxiliary power units with the invention applied thereto.

Referring to the drawing, 1 is an internal combustion engine constituting the main motor, and 6 is an electric storage battery constituting one of the primary sources of energy of the generating set, and across the line of the battery is an electro-magnetic machine 7 which is adapted to serve either as a motor or as a generator, the change from the one to the other function being automatically effected by the overbalancing of counter electro-motive forces.

On the shaft of the motor generator 7 is an internal combustion engine 8 of less power capacity than the main engine but of sufficient power to drive the generator, to start the main engine and to drive the vehicle or other object at moderate speeds independently of the main engine.

The electro-magnetic machine and the battery are of such capacity that when said machine is acting as a motor its capacity is not only sufficient to start the auxiliary engine but also to add its power to that of the auxiliary either when the latter is running at low speed or at its maximum so as to aid in rotating the auxiliary engine shaft and thus assist in starting the main motor, or driving the driven element ordinarily driven by said main motor.

The auxiliary engine is preferably adapted to operate continuously and when so operating it has a fixed speed, and consequently drives the motor generator and the other parts to which it is connected at a uniform speed which is an important factor in delivery current of constant amperage to the battery for recharging purposes and also of advantage in connection with the utilization of the engine for driving other mechanisms, as compared to the usual system in which the main engine is employed to recharge the battery and perform said other functions and in which arrangement the power delivered from said main engine varies, of course, with the variation of the speed thereof.

The elements described in the foregoing operate after the manner stated, and for a further description of said elements, their associate parts, and the manner of operation reference may be had to my co-pending application herein identified.

The shaft 11 of the auxiliary engine has mounted thereon a pump 28 of the force feed lubricating system and which pump operates directly from the auxiliary engine, to force the lubricant to all parts of the main engine, the auxiliary engine, and all mechanism operated thereby.

A pipe 29 delivers the oil from the crank casing 30 to the pump 28, and a pipe 31 delivers the oil from said pump 28 to the main bearing 32 of the crank shaft of the main engine, and from this point of delivery the lubricant will flow along the crank shaft for its entire length after the well known manner and by the system shown, the lubricant is distributed to all working parts.

The direct connection of the oil pump with the constantly running auxiliary engines

provides for a continuous supply of lubricant to the operating parts automatically, and at the time when the lubricant is most required, viz., when the main engine is about to be started, and also in cold weather when the lubricant frequently becomes congealed. Injury to the operating part due to an insufficient supply of oil when starting is thus avoided.

It is obvious that those skilled in the art may vary the details of construction and arrangement of parts without departing from the spirit of my invention, and therefore I do not wish to be limited to such features except as may be required by the claims.

Having thus described my said invention, what I claim as new and desire to secure by Letters Patent is:

1. The combination with a principal motor embodying a driven part and a housing, of a pump, conduits from the housing to the pump and from the pump to the driven part, an auxiliary motor connected to operate the pump independently of the principal motor and means to operate the pump from the principal motor without the application of power from the auxiliary motor.

2. The combination with a motor, of a pump, a dynamo-electric machine positioned to actuate the pump, an explosive engine connected to be started by the dynamo-electric machine and connected to drive the pump with or without the assistance of the dynamo-electric machine, and conduits properly connecting the pump with the motor and adapted to transfer lubricant from one part of the motor structure to another.

In witness whereof, I have hereunto set my hand and seal at Lowell, Massachusetts.

JOHN O. HEINZE. [L. S.]