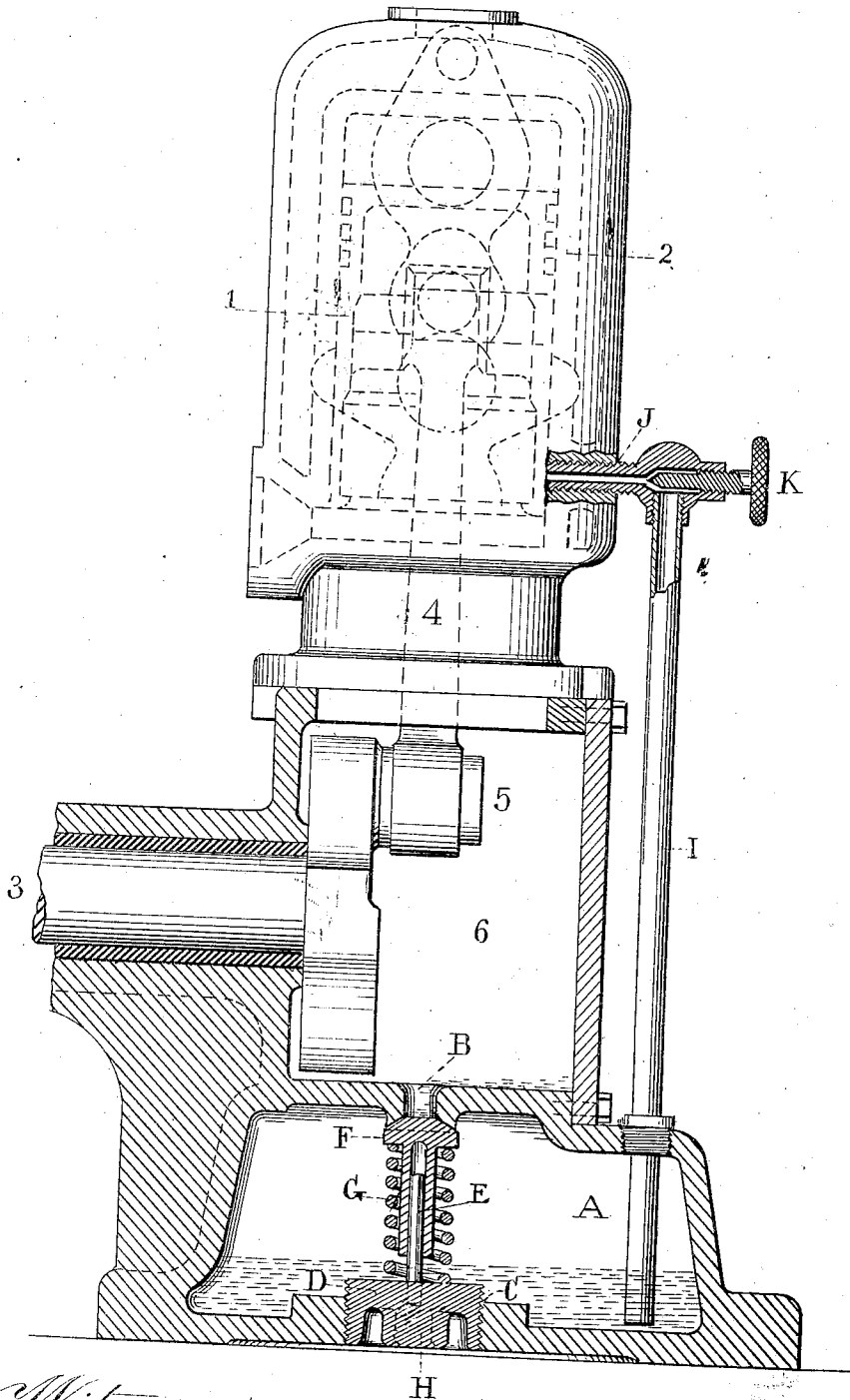


No. 821,915.

PATENTED MAY 29, 1906.

G. J. ALTHAM.
LUBRICATING DEVICE FOR INTERNAL COMBUSTION ENGINES.
APPLICATION FILED JULY 17, 1906.



Witnesses:

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UNITED STATES PATENT OFFICE.

GEORGE JOHN ALTHAM, OF SWANSEA, MASSACHUSETTS.

LUBRICATING DEVICE FOR INTERNAL-COMBUSTION ENGINES.

No. 821,915.

Specification of Letters Patent.

Patented May 29, 1906.

Application filed July 17, 1905. Serial No. 289,913.

To all whom it may concern:

Be it known that I, GEORGE JOHN ALTHAM, a citizen of the United States, residing at Swansea, in the county of Bristol and State of Massachusetts, have invented a certain new and useful Lubricating Device for Internal-Combustion Motors, of which the following is a specification.

My invention relates to means for lubricating the working parts of an internal-combustion motor. Its principal object is to furnish means whereby the working parts may be supplied with a constant abundant yet economical supply of lubricant. The said object is attained through means whereby the lubricant may, during the operation of the piston, be kept in continuous circulation, if desired, said circulation being brought about by so arranging the piping, valves, and oil-chamber, in relation to the crank-chamber of the motor that the alternate compressions and rarefactions in said chamber, due to the reciprocatory movements of the piston, are utilized to keep the lubricant in the oil-reservoir under a pressure that will when permitted force and furnish an abundance of lubricant to and at the working parts and after lubrication cause the lubricant to be redelivered to the oil-reservoir for continuous circulation.

A further object of my invention is to provide means whereby the lubricant is not allowed to collect in the crank-chamber and by being dashed about and carried to combustion-chamber to foul the spark-plugs to such an extent as to render ignition by them of explosive mixtures impossible.

The drawing shows my invention when applied to an internal-combustion motor, the piston and the interior of the cylinder appearing in dotted lines, while the crank-chamber and the elements in novel combination therewith are shown in section.

In the drawing illustrating the principle of my invention and the best mode now known to me of embodying that principle is shown a two-cycle three-port motor. A piston 1 is mounted in a cylinder 2 and drives a shaft 3 by means of a connecting-rod 4, connected to a crank 5 on the shaft 3 in a crank-chamber 6. An oil-reservoir A is in communication with and located beneath crank-chamber 6 and in the base of the motor. Leading downward from the crank-chamber 6 is an inlet B, which opens into the oil-reservoir A. Opposite this inlet B is a threaded opening C in the bottom

of the oil-reservoir. A threaded plug D, provided with a valve-stem guide E, supports a valve F and spiral spring G. By passing this valve and parts through the threaded opening C and then screwing the plug D into the opening, as with a wrench engaging a nut H, the parts are readily assembled and access to the oil-reservoir is readily gained. Leading away from near the bottom of the oil-reservoir A is a delivery-pipe I, which communicates with an opening J in the cylinder-casing and which is provided with a needle-valve K.

To use my invention, the piston 1 is caused to reciprocate in the usual manner, and on the downstroke the air in the crank-chamber 6 becomes compressed, forces the valve F open, rushes into and increases the pressure of the air in the oil-reservoir A. Upon the upstroke of the piston the pressure of the air in the crank-chamber is reduced below that in the oil-reservoir, and the valve in the oil-reservoir closes against its seat, until it is opened again by the excess of pressure, if any, of the air in the crank-chamber due to the downstroke of the piston; but as the pressure in the oil-reservoir is now above that of the atmosphere oil in the oil-reservoir begins to flow out through the delivery-pipe I, the pressure in the oil-reservoir becomes reduced. The air in the crank-chamber, however, during each downstroke of the piston becomes higher in pressure than that of the oil-reservoir, and sufficient air enters the oil-reservoir to make up for displacement of oil and restores the lost pressure. In short, by these downstrokes the pressure in the oil-reservoir may be kept above that of the atmosphere, and hence the oil tends to flow away from the oil-reservoir through the delivery-pipe, which may be led wherever desired. Should the amount of oil delivered be too much or too little, it can be easily regulated—for example, by the needle-valve K.

Where the oil is to be used over and over again, it may be delivered to some of the working parts—say the piston 1 and the cylinder 2—and all oil escaping from these parts be caused to flow to the bottom of the crank-chamber 6 and upon the opening of the valve F allowed to flow through the inlet B into the oil-reservoir A under pressure and again caused to circulate in the way already pointed out.

While I have shown means for obtaining a continuous circulation of lubricant, it is to be

understood that the oil may be delivered to the working parts intermittently, if desired. Further, oil may be supplied to the working parts only in such quantities as will be entirely used up by friction, and hence no means for leading oil back to the oil-reservoir will be required. In such an event the oil is introduced to the oil-reservoir only through an outside inlet, and never through that leading from the crank-chamber to the oil-reservoir; but in each and every case, obviously, the oil in the oil-chamber is during the operation of the motor under a pressure above that of the atmosphere and is ready to flow to the point desired the moment it is permitted so to do. In fine, by locating the oil-reservoir below the crank-chamber lubricant flows away from the crank-chamber and there is no objectionable collection of lubricant therein, and by providing the reservoir with an air-cushion for the lubricant that has passed through the valve into the reservoir the body of lubricant therein is under a pressure substantially uniform as distinguished from an intermittent and variable pressure, as is the case where there is no such air-cushion.

I wish to be clearly understood as not limiting myself to the particular apparatus shown, for the features of my invention may be embodied in many different forms without departing from its spirit. Desiring, therefore, to claim my invention in the broadest manner legally possible,

What I claim is—

1. In an internal-combustion motor, a reciprocating piston; a crank-chamber; an oil-reservoir located lower than the crank-chamber; means whereby the crank-chamber and the oil-reservoir are in communication; and a valve controlling the communication between the crank-chamber and the oil-reservoir, the movements of said valve being controlled by the compression and rarefaction of the atmosphere in the crank-chamber.

2. In a motor, a crank-chamber; a piston; a connecting-rod and crank in said crank-chamber; an oil-reservoir located in the base of the motor and below the crank-chamber; an inlet leading from the piston-chamber into the oil-reservoir; a valve located in the oil-reservoir to control the opening and closing of the inlet, said valve being controlled by the compression and rarefaction of the at-

mosphere in the crank-chamber, by the reciprocating piston.

3. In a motor, a reciprocating piston; a crank-chamber; an oil-reservoir; means whereby the crank-chamber and the oil-reservoir are in communication; a valve controlling the said communication; said valve and said oil-reservoir being so designed that there is an air-space in said reservoir to form a cushion for the lubricant in said reservoir, the said valve being controlled by alternate compressions and rarefactions of the atmosphere in the crank-chamber, by the reciprocating piston; and a delivery-pipe leading from said oil-reservoir; all designed to subject and deliver the lubricant whenever and wherever desired at a substantially uniform pressure.

4. In a motor, a reciprocating piston; a crank-chamber; an oil-reservoir located lower than the crank-chamber; an inlet leading from the crank-chamber downward into the oil-reservoir; a valve controlling said inlet whereby when the said valve is opened, any lubricant in the crank-chamber may flow past said valve and be caught in the oil-reservoir, there being air between the surface of said liquid and said valve; said valve being controlled by the compression and rarefaction of the atmosphere in the crank-chamber by the reciprocating piston; and the atmosphere in the oil-reservoir forming an air-cushion, whereby a substantially uniform pressure is exerted upon the lubricant in the oil-reservoir; and a delivery-pipe whereby the lubricant can be delivered whenever and wherever desired at a uniform pressure.

5. In a motor, a crank-chamber; an oil-reservoir; an inlet connecting the former with the latter; a threaded opening in the wall of the oil-reservoir, and opposite to the inlet; a threaded plug to close the threaded opening; and a valve operatively mounted upon the plug to open and close the inlet between the crank-chamber and the oil-reservoir; all designed to render the assemblage of the parts, and access to the oil-chamber, easy.

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

GEORGE JOHN ALTHAM.

Witnesses:

PHILIP E. TRIPP,
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