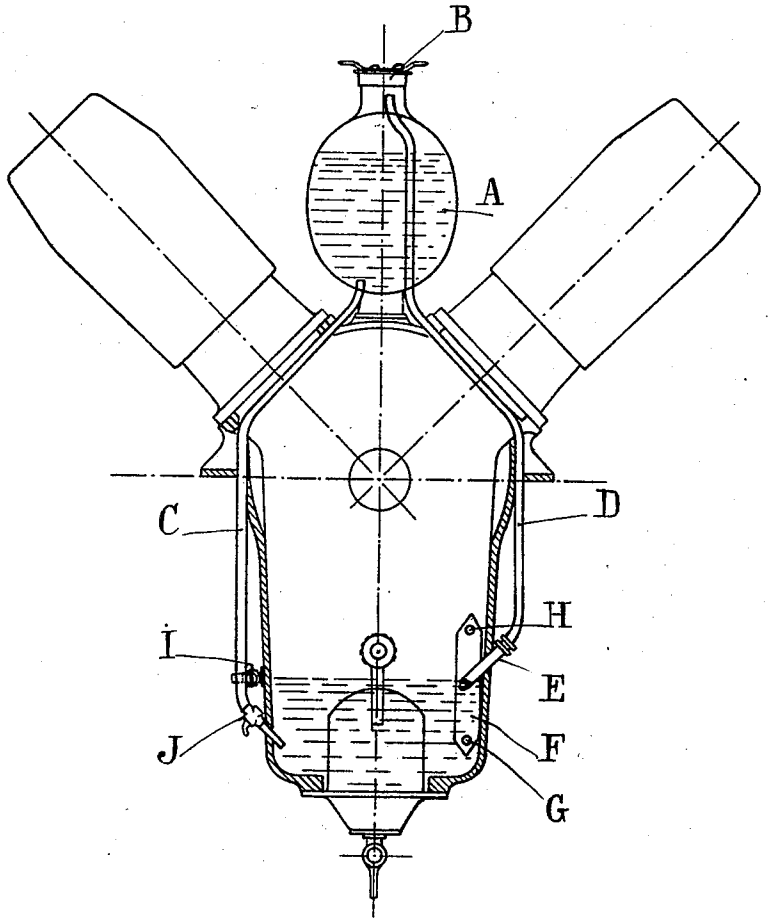
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APPARATUS FOR LUBRICATING INTERNAL COMBUSTION ENGINES.

APPLICATION FILED JUNE 14, 1917.

1,322,919. Patented Nov. 25, 1919.



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APPARATUS FOR LUBRICATING INTERNAL-COMBUSTION ENGINES.

1,322,919. Specification of Letters Patent. Patented Nov. 25, 1919.

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To all whom it may concern:

Be it known that I, AUGUSTE MAIRE, citizen of the Republic of France, residing at Route de Bezons, Argenteuil, Seine-et-Oise, in the Republic of France, have invented new and useful Improvements in Apparatus for Lubricating Internal-Combustion Engines, of which the following is a specification.

For assuring the lubrication of internal combustion engines pumps are at present almost universally employed which draw the oil from the lower part of the crank chamber serving as a reservoir, and deliver the said oil to all the parts of the engine.

The use of the lower part of the crank chamber as an oil reservoir may have certain drawbacks in the case of motor-car engines, and more particularly aviation engines.

Namely, in order to provide a considerable quantity of oil which will allow of running the engine for a certain length of time, it is necessary that the oil shall stand at a rather high level in the crank chamber, so that when the engine is inclined to any considerable extent the movement of the engine connecting rods are liable to cause the oil to spurt up into the cylinders.

On the other hand, if an auxiliary reservoir is employed from which the oil is drawn by a separate pump, there is a risk of variations occurring in the oil level in the crank chamber.

To avoid those drawbacks, apparatus has already been proposed comprising essentially a hermetically closed reservoir of lubricating oil which supplies the oil to the crank chamber by the sole action of gravity through a supply pipe leading from the lower part of the said reservoir into the lower part of the crank chamber. The level of oil in the crank chamber is kept constant by providing the reservoir with an air inlet pipe opening at one end into the upper part of the reservoir and at its other end into the crank chamber at the level at which it is desired to maintain the oil.

The present invention now consists in improvements in lubricating apparatus of the kind hereinbefore described. These improvements consist essentially in this that the air inlet tube instead of opening directly into the crank chamber, is now arranged to open into a box situated inside the crank chamber and provided at its upper and lower parts with small holes, in such a manner that the level of the oil in the said box will not be appreciably affected by the surging of the oil in the crank chamber at each inclination of the engine. As the end of the air inlet tube is not uncovered at each inclination of the engine, there will be no change of a rush of oil occurring into the crank chamber, and the level of the oil in the crank chamber will therefore remain practically constant.

The accompanying drawing illustrates by way of example a constructional form of apparatus according to this invention.

In the example, the oil reservoir A which is shown situated above the engine, may obviously be situated by the side of the engine provided that the bottom part of the said reservoir shall always be above the mean level of the oil.

This reservoir is provided with a plug B by means of which it can be closed in a perfectly tight manner. The reservoir is connected to the crank chamber by means of an oil supply pipe C and by means of an air inlet pipe D. The oil pipe C leads from the bottom of the reservoir and opens into the bottom part of the crank chamber. The air inlet pipe D leads from the upper part of the reservoir and it is provided at its lower end with a ferruled portion E which enters a box F fixed to the crank chamber and extends into said box down to the desired level of the oil.

The box F communicates at its lower end through a small hole G with the interior of the crank chamber, and it communicates at its upper end through small holes H likewise with the interior of the crank chamber.

The operation of the improved apparatus is as follows:

It is assumed that the crank chamber has been filled with oil up to the desired level by means of a cock I provided for this purpose. The oil reservoir can be shut off from the crank chamber by means of a cock J, which latter allows of filling the reservoir without oil flowing into the crank chamber.

After the reservoir has been closed by means of its plug, the cock J may be opened to let the oil run into the crank chamber. When the oil level reaches the level cock, the lower portion of the pipe E is immersed in the oil that has been able to enter the box F through the holes G and the oil in the reservoir A can no longer flow out, because a comparative vacuum is formed above the level of the oil in the reservoir, since air can only enter the reservoir through the pipes E and D which are sealed by the oil in the crank chamber.

As soon as the oil level sinks in the crank chamber, the lower end of the pipe E will be uncovered and the pressures in the reservoir A and in the crank chamber will come into balance, and consequently oil can flow out through the pipe C until the lower end of the pipe E is again sealed by the oil.

In the case of a sudden starting or a sudden braking of the motor-car, or in the case where the aeroplane rocks in the wind, the oil in the crank chamber will surge from side to side and would tend to uncover the lower end of the pipe E, but since the box F communicates with the crank chamber only through very small holes G and H, the level of the oil in the said box will not share the violent surging of the oil in the crank chamber, but will remain at a level which is the mean level between two consecutive oscillations. The box F thus acts as a shock-absorber. Without this box, the pipe might be uncovered in the sudden movements of the apparatus and the level of the oil would tend to rise in the crank chamber above the normal level.

The air inlet tube is made in two parts, and by making the ferruled portion E which is interchangeable, of suitable length, the level of the oil can be adjusted to any determined constant height for each particular case.

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

1. An apparatus for lubricating internal combustion engines comprising in combination: a crank case, an oil reservoir having its bottom part above the mean level of the oil in the crank case, an oil supply pipe connecting the bottom part of the said reservoir to the lower part of the crank case, a control chamber of a comparatively reduced size mounted in the crank case and communicating therewith by means of suitably sized holes provided at its upper part and at its lower part and an air inlet pipe opening at one end into the upper part of the oil reservoir and having its other end in the said control chamber substantially at the level at which it is desired the oil shall be adjusted in the crank case, substantially as described and for the purpose set forth.

2. An apparatus for lubricating internal combustion engines comprising in combination: a crank case, an oil reservoir having its bottom part above the mean level of the oil in the crank case, an oil supply pipe connecting the bottom part of said reservoir to the lower part of the crank case, a control chamber of a comparatively reduced size mounted in the crank case and communicating therewith by means of suitably sized holes provided at its upper part and at its lower part, an air inlet pipe opening at one end into the upper part of the oil reservoir and a removable pipe connected to the other end of said air inlet pipe and extending into the control chamber substantially as described and for the purpose set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

AUGUSTE MAIRE.

Witnesses:
LOUIS MOSES,
CHAS P. PRESSLY.