ABSTRACT OF THE DISCLOSURE

A crankcase bottom part for an internal combustion engine, especially with dry-sump lubrication, in which a pervious intermediate bottom is arranged between the sump and the rotating engine parts permitting the passage of the lubricant. The pervious intermediate bottom may be provided with deflection means on the side facing the rotating parts of the engine formed by tongue-portions punched out of the pervious intermediate bottom. The tongue-portions can be inclined so as to collect lubricant particles centrifuged by the rotating parts of the engine. Liquid-tight cover parts may also be arranged within the area of the pervious intermediate bottom above an aperture in the line system operable to suck off the lubricant.

The present invention relates to a crankcase bottom part for an internal combustion engine, especially with dry-sump lubrication.

The aim underlying the present invention essentially resides in reducing the harmful splash work in the lubricant sump.

As solution to the underlying problems, it is proposed according to the present invention that a liquid-permeable or pervious intermediate bottom is arranged between the sump and the rotating engine parts. Several advantages are achieved by the present invention. The oil stream or oil flow within the sump toward the suction place is quieter and is not disturbed by the rotating masses. The distance between the sump and the rotating engine parts can therefore be kept smaller, notwithstanding the arrangement of the intermediate bottom whereby the crankcase can be constructed more flat.

According to a further feature of the present invention, liquid-tight cover parts may be arranged within the area of the intermediate bottom above an aperture of the line system operable to suck off the lubricant. It is prevented thereby that the quieted inflow of the lubricant into the suction aperture is disturbed by the oil and/or oil swells and eddies of the connecting-rod weights or counterweights splashed through the intermediate bottom, and that no addition suction losses for the oil suction pumps arise.

According to another feature of the present invention, deflection parts for the centrifuged lubricant may be provided on the side of the intermediate bottom facing the rotating engine parts. The production of an oil roller produced by the rotating parts is prevented thereby.

Accordingly, it is an object of the present invention to provide a crankcase bottom part for internal combustion engines, especially with dry-sump lubrication, which avoids by simple means the aforementioned shortcomings and drawbacks encountered in the prior art.

Another object of the present invention resides in a crankcase bottom part which precludes the harmful splash effect in the lubricant sump.

A further object of the present invention resides in an internal combustion engine with a crankcase bottom part in which the oil flow in the sump toward the suction place is quieted and also protected against disturbance due to turbulence and swirls caused by the rotating engine parts.

Still a further object of the present invention resides in a crankcase bottom part for internal combustion engines, especially with dry-sump lubrication, which can be constructed relatively flat in accordance with present-day vehicle requirements.

Another object of the present invention resides in a crankcase bottom part for internal combustion engines with dry-sump lubrication in which the inflow of the lubricant into the suction aperture is rendered relatively calm, no additional unnecessary suction losses for the oil suction pumps occur and an oil roller produced by the rotating parts is precluded.

These and further objects, features and advantages of the present invention will become more obvious from the following description when taken in connection with the accompanying drawings which show, for purposes of illustration only, one embodiment of a crankcase in accordance with the present invention and wherein:

FIG. 1 is a cross-sectional view through a crankcase bottom part in accordance with the present invention; and

FIG. 2 is a schematic longitudinal cross section through a crankcase bottom part in accordance with the present invention illustrating certain additional features in accordance with the present invention.

Referring now to the drawing and more particularly to FIG. 1, reference numeral 10 generally designates in this figure a crankcase bottom part in which an intermediate bottom 12, made from sheet metal, is secured by means of bolts 13 at housing supports 14, 15 and 16 closely above the housing bottom 11.

The radially outermost paths of the rotating engine parts relative to the crankshaft axis 17 are designated in FIG. 1 by reference numerals 18, 19, 20 and 21.

Deflection tongues 12a are punched out or formed out of the sheet metal bottom 12 which collect the oil-air mixture particles swirled along in the direction of arrow 22 and guide the same into the sump through the apertures 12b of the intermediate bottom 12. The apertures 12b are produced by stamping out or punching out of the tongues 12a.

In FIG. 2, the crankcase bottom part is designated by reference numeral 23 and the apertured intermediate bottom by reference numeral 24. At an end face of the bottom part 23, a suction channel 25 extending transversely to the crankshaft axis is provided which terminates by way of a sieve 26 and of a suction connection 27 in the sump of the crankcase. A fluid-tight covering sheet metal plate 29 is securely arranged and held stationary above the aperture 28 of the suction connection 27 on the side of the sump which effects a quieting and calming of the inflow at the aperture 28 also in the case when rotating engine parts thrust or centrifuge oil or oil mixture particles into the sump above the aperture 28.

While we have shown and described only two embodiments in accordance with the present invention, it is understood that the same is not limited thereto, but susceptible of numerous changes and modifications as known to a person skilled in the art, and we therefore do not wish to be limited to the details shown and described herein but intend to cover all such changes and modifications as are encompassed by the scope of the present invention.

We claim:

1. A crankcase bottom part for an internal combustion engine, especially with dry-sump lubrication, characterized in that a permeable intermediate bottom is
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arranged between the sump and the rotating engine parts, a line system having a suction aperture being provided for the lubricant, and fluid-tight cover means being arranged within the area of the intermediate bottom above the suction aperture of the line system, wherein the intermediate bottom is provided with deflection means on its side facing the rotating parts of the engine for guiding centrifuged lubricant particles through the intermediate bottom.

2. A crankcase bottom part for an internal combustion engine, especially with dry sump lubrication, characterized in that a permeable intermediate bottom is arranged between the sump and the rotating engine parts, wherein the intermediate bottom is provided with deflection means on its side facing the rotating parts of the engine for guiding centrifuged lubricant particles through the intermediate bottom.

3. A crankcase bottom part according to claim 1, further comprising means for detachably securing said intermediate bottom to the crankcase bottom part.

4. A crankcase bottom part according to claim 3, wherein said deflection means are formed by tongue-portions punched out of the intermediate bottom leaving apertures rendering said intermediate bottom pervious to the lubricant.

5. A crankcase bottom part according to claim 4, wherein the tongue-portions of the deflection means are so inclined as to collect lubricant particles taken along and centrifuged by the rotating engine parts.

6. A crankcase bottom part according to claim 2, further comprising means for detachably securing said intermediate bottom to the crankcase bottom part.

7. A crankcase bottom part according to claim 6, wherein said deflection means are formed by tongue-portions punched out of the intermediate bottom leaving apertures rendering said intermediate bottom pervious to the lubricant.

8. A crankcase bottom part according to claim 7, wherein the tongue-portions of the deflection means are so inclined as to collect lubricant particles taken along and centrifuged by the rotating engine parts.

9. A crankcase bottom part according to claim 2, wherein said deflection means are formed by tongue-portions punched out of the intermediate bottom leaving apertures rendering said intermediate bottom pervious to the lubricant.

10. A crankcase bottom part according to claim 2, wherein the deflection means are so inclined as to collect lubricant particles taken along and centrifuged by the rotating engine parts.

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