Feb. 17, 1925. 1,526,744

W. EBERLE

CYLINDER COVER FOR INTERNAL COMBUSTION ENGINES

Filed April 4, 1922 2 Sheets-Sheet 1

Fig. 1.

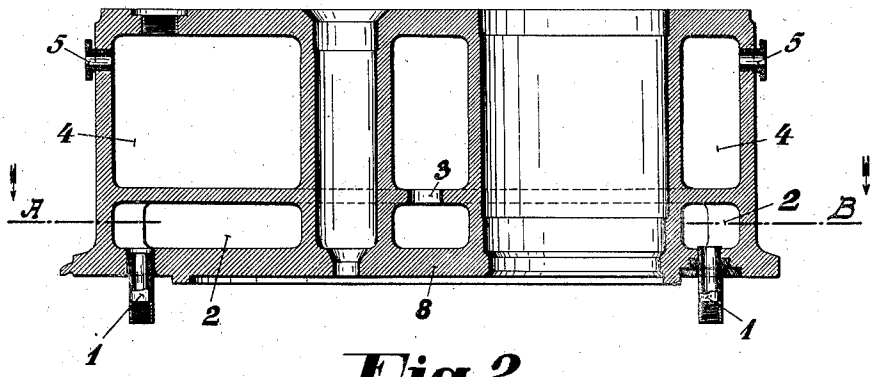
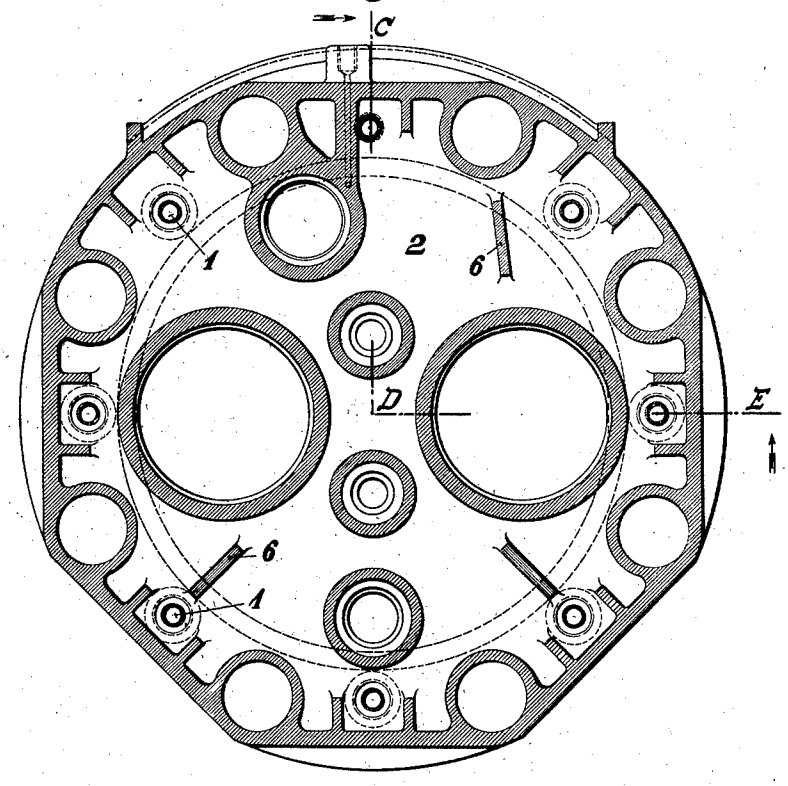


Fig. 2.



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Fig. 3.

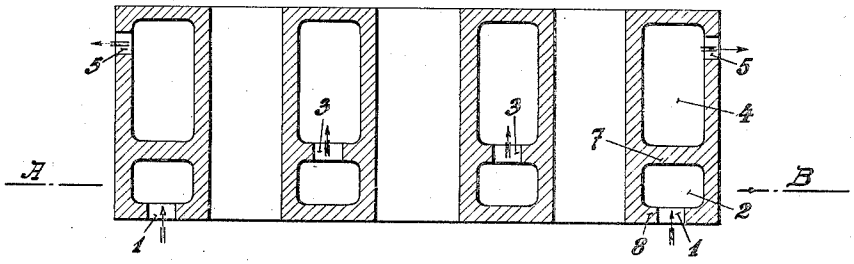
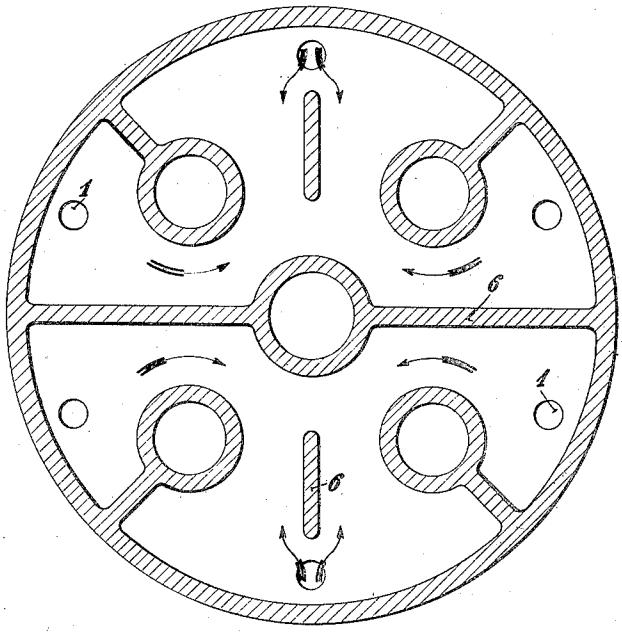


Fig. 4.



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Patented Feb. 17, 1925. 1,526,744

UNITED STATES PATENT OFFICE.

WILHELM EBERLE, OF AUGSBURG, GERMANY, ASSIGNOR TO THE FIRM: MASCHINENFABRIK AUGSBURG-NUERNBERG AKTIENGESELLSCHAFT, OF AUGSBURG, GERMANY, A GERMAN CORPORATION.

CYLINDER COVER FOR INTERNAL-COMBUSTION ENGINES.

Application filed April 4, 1922. Serial No. 549,527.

To all whom it may concern:

Be it known that I, WILHELM EBERLE, a citizen of the German Republic, residing at Augsburg, Germany, have invented certain new and useful Improvements in Cylinder Covers for Internal-Combustion Engines, of which the following is a specification.

This invention relates to a cylinder cover for internal combustion engines, more especially for the larger type engines, and it consists in an arrangement by means of which such cylinder covers may be effectfully cooled in such a manner that the parts lying in the proximity of the cylinder axis are cooled more intensely than the less heated parts near the circumference of same. To achieve this purpose the cooling medium, according to the invention, is caused to circulate through the cylinder cover in a radially directed stream, starting near the circumference and flowing towards the centre, so that on account of the diminishing cross section of the passage the velocity of flow will increase correspondingly, thereby exerting a better cooling action at about the centre of the cylinder cover. The invention is particularly suitable for such cylinder covers in which the cooling jacket is subdivided into two differently sized cooling chambers.

In the accompanying drawings—

Fig. 1 is a cross section on line C D E of Fig. 2 through a cylinder cover for a Diesel engine constructed in accordance with the invention,

Fig. 2 is a horizontal section taken on line A B of Fig. 1.

Figs. 3 and 4 are similar illustrations showing the subject matter of the invention purely diagrammatically.

The cooling medium, for example water or oil, enters through a number of openings 1 which are spaced along the circumference of the cylinder cover into the chamber. This chamber lies close to the combustion space of the engine and the cooling medium flows from the circumference approximately radially towards the centre and along the bottom surface 8 which is to be cooled. Near the centre it passes through openings 3 into the upper cooling chamber 4 which is positioned more remote from the cylinder and is therefore less heated. Within this chamber the cooling medium takes an outwardly directed flow and eventually leaves the cylinder cover through discharge openings 5. Baffles or partitions 6 are provided to direct the flow of the liquid so as to ensure of an even and effective cooling action being obtained.

It must be understood that the invention is not limited to a cylinder cover of the type described, its main feature being that by imparting to the cooling medium a radial flow from the circumference towards the centre an increase in the velocity of the flow is set up which is utilized to effect a thorough cooling of the highly heated parts near the central axis of the cylinder. Another point of special advantage is the provision of means to positively direct the flow of the cooling medium in the lower and in the upper chamber of the cylinder cover, whereby the velocity of flow can be exactly regulated.

What I claim is:

1. In a cylinder cover the combination of a cooling chamber one wall of which closes the end of the cylinder, a larger chamber superposed thereon, and communicating directly with the cooling chamber near the axis thereof, a plurality of inlets in said first chamber disposed along the periphery thereof, and a plurality of outlets from said superposed chamber, said outlets being also located along the periphery thereof.

2. A cylinder cover comprising the combination of a cooling chamber one wall of which serves as a cylinder wall, a second chamber superposed thereon and communicating with said first chamber near the axis thereof, a plurality of inlets disposed near the periphery of said first chamber and a plurality of outlets disposed in the periphery of said second chamber, the chambers being so arranged and constructed as to cause the cooling medium to flow with reduced velocity in said second chamber.

3. In a cylinder cover having its cooling space sub-divided into a small chamber, one wall of which closes the end of the cylinder, and a larger chamber superposed on said small chamber and communicating directly therewith near the axis of the cylinder, the combination of a plurality of inlets in said small chamber disposed near the periphery thereof, a plurality of outlets from said large chamber disposed in the periphery

thereof, and means in said small chamber for directing the flow of the cooling medium in a substantially radial direction from the inlets to the point of communication with said large chamber.

4. In a cylinder cover, the combination of a small cooling chamber, one wall of which closes the end of the engine cylinder, a larger cooling chamber superposed therein, a plurality of openings disposed near the periphery of the small chamber for the admission of the cooling medium, openings near the center of the small chamber providing a direct communication with the large chamber for the discharge of the cooling medium thereinto, a plurality of outlets from the large chamber disposed in the periphery thereof, and a plurality of baffle plates disposed in said small chamber near the inlets and serving to direct the cooling medium toward the openings into the larger chamber along substantially radial paths.

5. In a cylinder cover, the combination of a small cooling chamber, one wall of which closes the end of the engine cylinder, a larger cooling chamber communicating with said small chamber near the axis thereof, a plurality of openings spaced along the circumference of the small chamber for the admission of the cooling medium, baffle plates in the small cooling chamber to produce an even flow of the cooling medium toward the axis of the latter, and a plurality of outlets from said superposed chamber disposed along the periphery thereof, said chambers being of such relative dimensions as to reduce the velocity of flow of the cooling medium in said superposed chamber.

In testimony whereof I have hereunto set my hand, in the presence of two subscribing witnesses.

W. EBERLE.

Witnesses:
ADE SOTO,
ALESEIR PHILIPPOFF.