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PATENT SPECIFICATION

DRAWINGS ATTACHED

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COMPLETE SPECIFICATION

Cylinder Head for Internal Combustion Reciprocating Engine

We, LANCIA & C. FABBRICA AUTOMOBILI TORINO S.p.A., a Company organised under the laws of Italy, of 27, Via Vincenzo Lancia, Turin, Italy, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

This invention relates to a cylinder head for an internal combustion reciprocating engine.

An object of the invention is to provide a cylinder head which is suitable for use with fuels of low volatility.

According to the present invention there is provided a cylinder head for an internal combustion a reciprocating engine including an induction conduit having an end portion of volute shape for leading combustible mixture into a cylinder, said induction conduit being so arranged that at least part of said end portion is heated by the engine exhaust gases in operation of the cylinder head, the volute-shaped end portion of the induction conduit being surrounded at least in part by at least one branch conduit communicating with an exhaust conduit for leading exhaust gases from the engine.

With this arrangement the heavier particles of the combustible mixture are centrifuged by the rotary flow imparted to the mixture by the said volute-shaped end portion onto the wall of the induction conduit; said particles are heated and vaporised by the action of the hot exhaust gases heating said wall.

It thus becomes possible to admit to the cylinder combustible mixtures formed with fuel of low volatility under suitable conditions for satisfactory combustion. The invention is particularly applicable to internal combustion engines of the spark-ignition type.

The invention will be described by way of example only, with reference to the accompanying drawings, in which:—

Figure 1 is a horizontal sectional view of part of the cylinder head of an internal combustion reciprocating engine according to one embodiment of the invention, taken on line A—A of Figure 2, and

Figure 2 is a vertical sectional view of said head taken on line B—B of Figure 1.

Referring to the drawings, an internal combustion reciprocating engine of the spark-ignition type, part of which is shown in broken outline at E in Figure 2, has a number of cylinders C (part of one only of which is shown in Figure 2) surmounted by a cylinder head 1. That part of the head 1 associated with one of the cylinders C is shown diagrammatically in Figures 1 and 2 for simplicity.

The head 1 is provided internally with an induction conduit 2 for leading combustible mixture into the cylinder C through an inlet port 3 communicating with a recessed combustion chamber 4 adapted to close the upper end of the cylinder C (Figure 2).

An exhaust conduit 5 communicates with the combustion chamber 4 through an outlet port 6. Flow through the ports 3 and 6 is controlled by inlet and exhaust valves respectively. In the interest of clarity the valves are not shown in the drawings, but the axes of the valves are indicated by chain lines V in Figure 2.

The head 1 is also provided with internal passages 7 for the circulation of cooling liquid.

The exhaust conduit 3 is formed with at least one branch conduit 3a which surrounds, at least partially, an end portion 2a of the induction conduit 2 adjacent the inlet port 3. The end portion 2a is of volute shape so that heavier particles of fuel in the combustible mixture flowing therethrough are thrown by centrifugal action against the internal wall of the end portion 2a.

The or each branch conduit 3a is arranged so that the hot exhaust gases flowing therethrough in operation of the engine E heat the volute-shaped end portion 2a and vaporise the said heavier particles of fuel which have been

thrown by centrifugal action onto the internal wall of the end portion 2a.

The or each branch conduit 3a may be blind, or, as shown in broken lines may communicate with the corresponding branch conduit or conduits 3a of the adjacent cylinder or cylinders of the engine E.

It will be appreciated that constructional details of the head may be varied with respect to the above-described embodiment within the scope of the invention. Thus, for example, the shape of the combustion chamber 4, the arrangement of the valve axes V and the disposition of the various conduits may differ from the illustrated example.

WHAT WE CLAIM IS:—

1. A cylinder head for an internal combustion reciprocating engine including an induction conduit having an end portion of volute shape for leading combustible mixture into a cylinder, said induction conduit being so arranged that at least part of said end portion is heated by the engine exhaust gases in operation of the cylinder head, the volute-shaped end portion of the induction conduit being surrounded at least in part by at least one branch conduit communicating with an exhaust conduit for leading exhaust gases from the engine.

2. A head as claimed in Claim 1, in which the or each branch conduit is blind.

3. A head as claimed in Claim 1, in which the or each branch conduit associated with a respective cylinder communicates with the branch conduit or conduits associated with the adjacent cylinder or cylinders.

4. A cylinder head substantially as herein described with reference to and as shown in the accompanying drawings.

5. An internal combustion reciprocating engine of the spark-ignition type provided with a cylinder head according to any one of the preceding claims.

FORRESTER, KETLEY & CO.
Chartered Patent Agents.
Jessel Chambers,
88—90, Chancery Lane,
London, W.C.2.
and
Rutland House,
Edmund Street,
Birmingham 3,
Agents for the Applicants.

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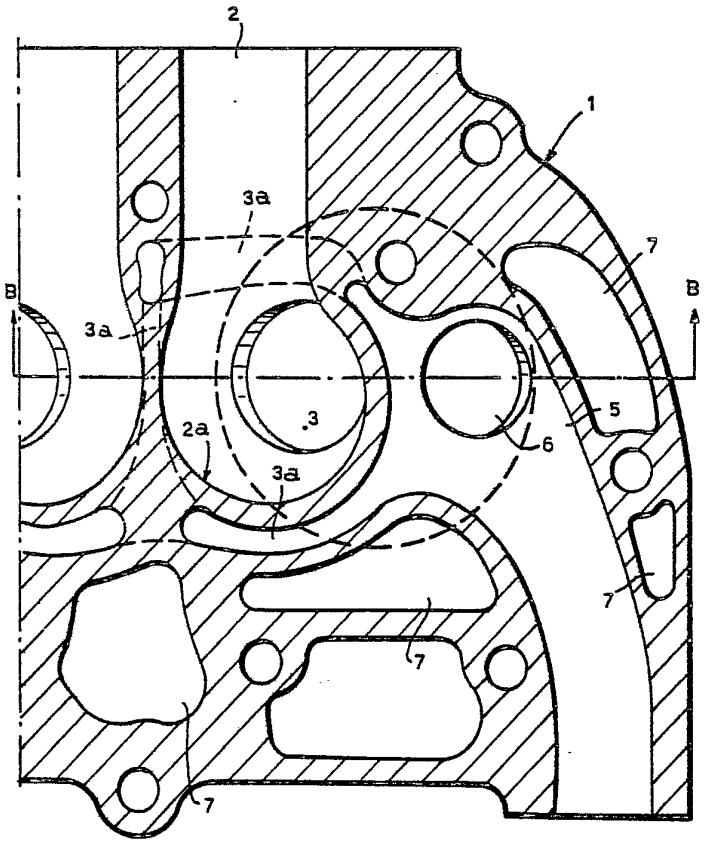
2 SHEETS *This drawing is a reproduction of the Original on a reduced scale*
Sheet 1

Fig. 1



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Sheet 2

Fig.2