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**COMPLETE SPECIFICATION.**

**Improvements in or relating to Cylinder Heads for Internal Combustion Engines.**

I, ALFRED BOORER, a British Subject, of 53 Broadwater Street West, Worthing, Sussex, do hereby declare the invention, for which I pray that a patent may be granted to me, and the method by which it is to be performed, to be particularly described in and by the following statement :—

This invention relates to cylinder heads for internal combustion engines of the kind in which a valve chamber containing the inlet and exhaust ports may be brought into and out of communication with a combustion chamber at the end of the engine cylinder through a port controlled by a master valve, which combustion chamber contains the igniting means for the combustible charge.

According to this invention a cylinder head of the kind referred to above for an internal combustion engine is characterised in that the combustion chamber is separated into a plurality of compartments each communicating with the valve chamber through a port controlled by a separate master valve. For example, the combustion chamber may be separated into two compartments each having its own master valve.

Each said master valve may comprise a poppet valve.

The inlet and exhaust valves may be cylindrical rotary valves arranged within valve casings and having cross passages formed therein which during rotation register with ports on opposite sides of the casings.

Igniting means for the combustible charge may either be disposed in each compartment, or a single igniting means may be disposed in a passage or the like communicating with the compartments.

Each compartment may be provided with a restricted mouth where it joins the end of the cylinder.

The compartments of the combustion chamber in cross section in a plane at right angles to the axis of the cylinder may each

be circular and in cross section parallel to said axis may have concavely curved side walls.

In the case where a single ignition means is provided the passage containing it may at its ends join the concavely curved walls of the two combustion chamber compartments.

The above arrangements are particularly applicable to comparatively large bore engines and enable very high pressure ratios to be employed with a compact combustion chamber arrangement.

The following is a description of one embodiment of the invention reference being made to the accompanying drawings, in which :—

Figure 1 is a vertical cross section through the cylinder head in a plane containing the axis of an engine cylinder ;

Figure 2 is a vertical cross section through the cylinder head in a plane at right angles to that of Figure 1 ; and

Figure 3 is under plan view of a part of a cylinder head showing an alternative arrangement of a sparking plug to that shown in Figure 2.

There is provided in the cylinder head above each cylinder 11 a valve chamber 12. Each valve chamber 12 communicates on one side through an inlet port 13 with a cylindrical inlet valve casing 14 which contains a cylindrical rotary inlet valve 15, the rotary valve is provided with a cross passage 16. The inlet valve casing 14 communicates through a port 17 with an inlet passage 18. Each valve chamber 12 on the other side communicates through a port 19 with an exhaust valve casing 20 containing a cylindrical rotary exhaust valve 21 having a cross passage 22. The exhaust valve casing 20 communicates through a port 23 with an exhaust passage 24. During valve rotation the passages 16, 22 register with the opposed ports 13, 17 and 19, 23 respectively. Each

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valve chamber 12 is also provided with two valve seats 25 with which co-operate respectively two master poppet valves 26. The poppet valves control the flow of gases into and out of a combustion chamber separated into two compartments 27 which in plan view are circular in contour. The two compartments each communicate with the cylinder 11 through a reduced opening 28. The two valve seats 25 are separated from one another by a wall 29 containing a cooling passage 30. The upper face of the wall is rounded at 31 so as to promote streamline flow of the inlet gases through both the valve seats 25. As will be seen from Figures 1 and 2, the side walls of both compartments 27 are concavely rounded. In the arrangement shown in Figures 1 and 2, each compartment is provided with a sparking plug socket 32, and a restricted mouth where it joins the end of the cylinder.

In the construction shown in Figure 3 a single sparking plug socket 33 is provided between the two compartment which sparking plug socket communicates with a cross passage 34. The cross passage 34 extends across the wall 29 and communicates at its ends with the two compartments 27 respectively through the side walls thereof.

What I claim is:—

1. A cylinder head of the kind referred to for an internal combustion engine, wherein the combustion chamber is separated into a plurality of compartments each communicating with the valve chamber through a port controlled by a separate master valve.

2. A cylinder head according to Claim 1, wherein the combustion chamber is separ-

ated into two compartments each having its own master valve.

3. A cylinder head according to either of the preceding claims, wherein each master valve is a poppet valve.

4. A cylinder head according to any of the preceding claims, wherein the inlet and exhaust valves are rotary valves.

5. A cylinder head according to Claim 4, wherein said rotary valves are cylindrical and are arranged within valve casings and have cross passages which during rotation register with ports on opposite sides of the valve casings.

6. A cylinder head according to any of the preceding claims, wherein either igniting means for the combustible charge is disposed in each compartment or a single igniting means is disposed in a passage or the like communicating with the compartments.

7. A cylinder head according to any of the preceding claims, wherein each compartment is provided with a restricted mouth where it joins the end of the cylinder.

8. A cylinder head according to any of the preceding claims, wherein the compartments of the chamber, in cross section in the plane at right angles to the axis of the cylinder, are circular in contour and in cross section parallel to said axis have concavely curved side walls.

9. A cylinder head for an internal combustion engine substantially as described with reference to the accompanying drawings.

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#### PROVISIONAL SPECIFICATION.

### Improvements in or relating to Cylinder Heads for Internal Combustion Engines.

I, ALFRED BOORER, a British Subject, of 53 Broadwater Street West, Worthing, Sussex, do hereby declare this invention to be described in the following statement:—

This invention relates to cylinder heads for internal combustion engines of the kind in which a valve chamber containing the inlet and exhaust valves may be brought into and out of communication with a combustion chamber at the end of the engine cylinder through a port controlled by a master valve, which combustion chamber contains the igniting means for the combustible charge.

According to this invention a cylinder head of the kind referred to above for an internal combustion engine is characterised in that the combustion chamber is separated into a number of compartments each communicating with the valve chamber through

a port controlled by a separate master valve. For example, the combustion chamber may be separated into two compartments each having its own master valve or valves.

Each said master valve may comprise a poppet valve.

The inlet and exhaust valves may be rotary valves.

Igniting means for the combustible charge may either be disposed in each compartment, or a single igniting means may be disposed in a passage or the like communicating with those compartments.

Each compartment may be provided with a restricted mouth where it joins the engine cylinder.

The compartments of the combustion chamber in cross section in a plane at right angles to the axis of the cylinder may each

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be circular and in cross section parallel to said axis may have concavely curved side walls.

5. In the case where a single ignition means is provided the passage containing it may at its ends join the concavely curved walls of the two combustion chamber compartments. The above arrangements are particularly

applicable to comparatively large bore engines and enable very high pressure ratios to be employed with a compact combustion chamber arrangement. 10

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