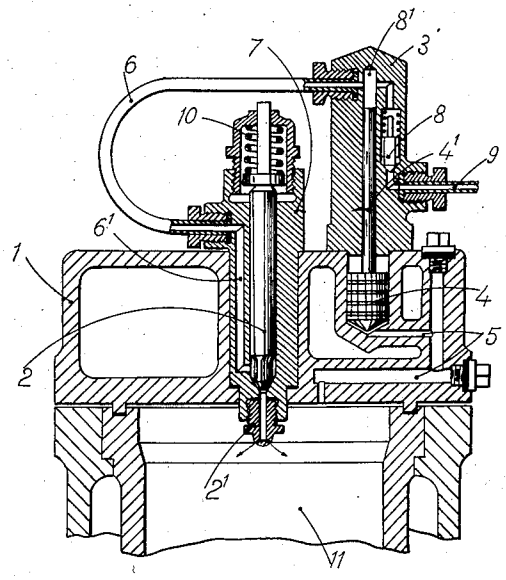
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CYLINDER HEAD OF INTERNAL COMBUSTION ENGINES COMBINED WITH FUEL INJECTORS

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CYLINDER HEAD OF INTERNAL-COMBUSTION ENGINES COMBINED WITH FUEL INJECTORS.

Application filed November 14, 1924, Serial No. 749,985, and in France December 21, 1923.

This invention relates to a special form of cylinder head for internal combustion engines arranged in such manner that a part thereof is directly combined with the fuel injector described in the British patent of the same inventor No. 150,364 of the 12th February 1918.

The result of this method of construction is to obtain the considerable technical advantages and at the same time lowering the cost of erecting the injector and rendering the fitting up and dismantling of its parts much more easy, as will be shown hereinafter in the complete description of the invention.

The accompanying drawing is a section of the cylinder-head and of the injector according to the invention.

Referring to the drawing 1 is the cylinder-head of the engine, which is provided with seats and passages which are parts of the injector itself, for example, the differential injection needle 2, loaded by the spring 10, the member 3 at the side containing different organs of the injector is attached to the top of the cylinder-head, the piston 4 working in a cylinder formed in the cylinder-head itself. Passages 5 place the lower part of this cylinder containing the piston 4 in continuous communication with the combustion chamber 11 of the engine. The pipe 6 connects the member 3 with the member 7 in which the differential needle 2 works.

It follows from this construction that cylinder head and injector form one aggregate and that all the members comprised in the cylinder head are cooled normally by the circulating water for the cylinder-head itself. At the same time all the members on the cylinder-head remain cold, which considerably facilitates dismantling and re-erection and obviates heat radiation, a condition which is essential in cases where the engine rooms are small, as in submarines for example.

This cooling also provides another advantage in that it further protects the piston 4 and the cylinder containing it from the hot gases coming from the combustion chamber 11 of the working cylinder. The passages 5 moreover are without joints being formed in the cylinder-head itself.

In order that the above remarks may be understood the way in which the injector works will be shortly stated.

The cylinder with its differential piston 4—4′ which delivers the liquid fuel is continuously in communication through the passages 5 with the combustion chamber 11 of the engine. The fuel is supplied under pressure by the fuel-pump through the pipe 9 and has to pass through the small non-return valve 8 into the chamber 8′ whence it is delivered by the piston 4′ into the pipe 6 and through the passage 6′, provided in the member 7, into the part reserved around the end of the needle 2 of the spraying nozzle 2′.

When the pressure of the liquid under the action of the compression in the chamber 11 attains a predetermined limit the differential needle 2 is lifted off its seat and the liquid, driven forward by the plunger 4′ of the piston 4 which rises, is injected by the spraying nozzle 2′ at the right time.

Claim—

In an internal combustion engine, in combination, a main cylinder, a head therefor provided with a cylindrical chamber and also provided with a passageway leading from a point in communication with the cylinder to the inner end of the chamber, a differential spring loaded injection valve mounted centrally through the head and in communication with the main cylinder, a member mounted on the main cylinder-head provided with a bore in communication with the cylindrical chamber, valve controlled fuel supply means mounted in the member and traversing the bore and connected with and in communication with the seat of the injection valve, a differential piston the lower portion of which operates in the chamber of the head, while the upper portion operates in the bore of the member, said differential piston being responsive to the main cylinder and acting in timed relation with the operation of the injection valve for controlling the passage of the solid fuel into the main cylinder, and a jacket provided in the main cylinder head, chamber passageway and injection valve, substantially as and for the purposes set forth.

In testimony whereof I hereunto affix my signature.

VADIME ARCHAOULOFF.