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DEVICES FEEDING WITH AIR THE EXPLOSION CHAMBER
OF INTERNAL COMBUSTION MOTORS
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Fig. 1

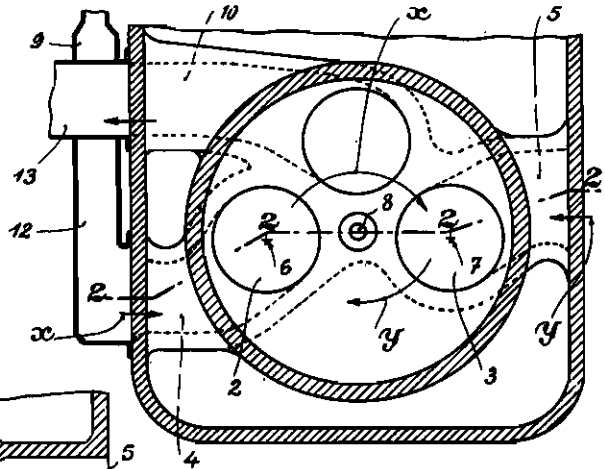


Fig. 2

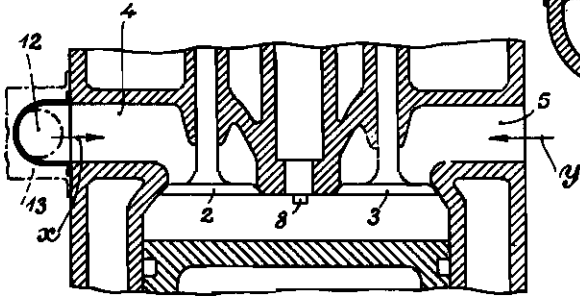


Fig. 3

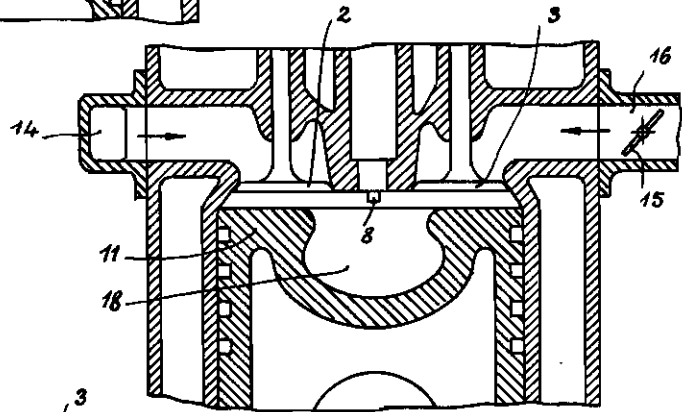
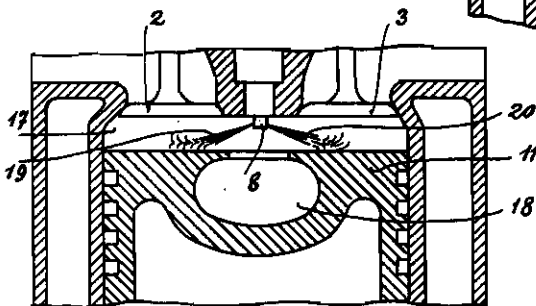


Fig. 4



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DEVICES FEEDING WITH AIR THE EXPLOSION CHAMBER OF INTERNAL COMBUSTION MOTORS

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This invention relates to an improved device feeding with air the explosion chamber of internal combustion motors.

In the explosion chamber of the internal combustion motors, it is difficult to secure a complete combustion of the liquid introduced at any speed of the motor. In order to bring a sufficient quantity of air into contact with the jet or jets of the fuel the operator must endeavour to bring into whirling the air molecules during all the duration of the admission and of the compression in the cylinder.

The appliance for the introduction of air into the explosion room of internal combustion motors which constitutes the object of the invention provides the necessary means to favour and to create an increased and controlled whirling of the admitted air round the injector of the liquid fuel.

It is characterized by the fact that two or more valves are disposed in the cylinder with respect to the injector in points quite diametrically opposed, if there are two only, to admit the air-current arriving from the exterior through distinct pipes. These distinct pipes for air-feeding have their inlet orifices situated, by preference, on both sides of the motor in order to introduce into the cylinder two air-currents having different temperatures and pressures and capable of favouring the combustion at any speed at which the motor revolves.

The explosion chamber may, moreover, be divided into two parts the volume ratio of which takes into account the admission of air, and the jets are conceived in such a manner as to bring the totality of the injected liquid to a complete combustion. Thus, this arrangement of the feeding valves and of the injector may be used in combination with a piston the bottom of which comprises a suitable hollow in order to serve as air reserve for certain critical working cases of the motor from the point of view of the combustion.

At last, the feeding device may also be used in combination with an injector disposed in such a manner as to secure the diffusion of any liquid in the air brought into increased and controlled whirling without that the sides of the cylinder head nor those of the hollow of the piston, if it exists, may be attained.

The invention will be well understood by the aid of the following description and the annexed schematic drawing which are given by way of example.

Fig. 1 is a plane-view seen from below.

Fig. 2 is a sectional view according to 2—2 of the Fig. 1 of a device comprising two distinct admission valves.

Fig. 3 shows a section of a device by the aid of which it is possible to introduce air, under various pressures, into the admission valves.

Fig. 4 is a sectional view of an explosion chamber divided into two parts with two admission valves.

Two distinct admission valves 2 and 3 are foreseen in the device represented on Figs. 1 and 2. Air arrives at the valve 2 by the pipe 4 distinct from that designated by 5 which feeds the valve 3.

The axes of the valves seen in 6 and 7 Fig. 1 are situated in nearly diametrically opposed points with respect to the injector 8. It results from this arrangement that the admitted air-currents follow, on the one hand, the arrows *x*, and on the other hand the arrows *y*, what gives them a whirling motion round the injector 8.

As the drawing shows, the air-current enters on the left respectively on the right of the motor. The left inlet 9 has been foreseen in the vicinity of the evacuation orifice 10. The air-current entering in 9 may be at a temperature superior or lower to that entering on the right by the pipe 5 if a heating system 12 is disposed in a suitable manner, this heating system forcing the air-current to run along the exterior sides of the exhaust pipe 13.

A sectional view of a device bringing the air-current to the admission valves under different pressures obtained either by compression or by depression, is represented on Fig. 13. A pipe 14 brings to the valve 2 an air-current compressed by the aid of a mechanical system such as a compressor, a ventilator or by any other means giving to the air-current a pressure superior to the atmospheric pressure. Besides this arrangement and independently of it, the valve 3 may be fed with air under the pressure inferior to that of the ambient air by working a system such as the throttle valve 15 which obstructs in part or in totality the feeding pipe 16 of the ambient air to the pipe of the valve 3.

Fig. 4 shows how the explosion chamber is divided into two principal parts the one of which is constituted by the principal cylindrical volume 17 formed by the bottom of the piston 11 and the sides of the cylinder head and of the cylinder, the other by a revolving volume or cavity 18 having a suitable shape and foreseen in the bottom of the piston. When the piston performs its motions these two volumes bring about a whirling which adds to the gyroscopic motion resulting

from the two distinct air entrances foreseen in the arrangement.

One of the characteristic features of the invention is, moreover, given by the fact that the jets 19 and 20 of the injector 8 are imagined in such a manner that the increased and controlled whirling, as said above, hinders the jets from striking the sides of the explosion chamber and

make the best use of the cavity, without entering it, constituting an air reserve in the piston for certain critical cases from the point of view of the combustion. In this manner, the totality of the injected liquid is brought to a complete combustion.

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