

July 26, 1949.

A. IDE

2,477,374

TWO-STROKE MOTOR

Filed Nov. 5, 1945

FIG.1

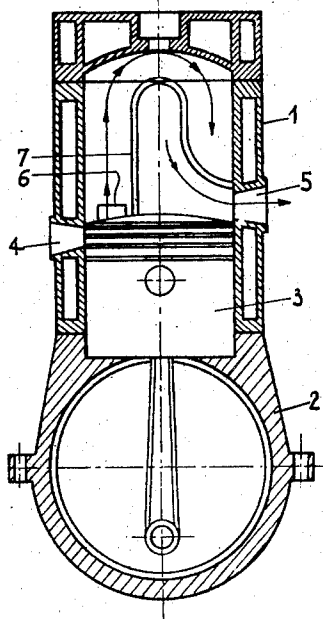


FIG.2

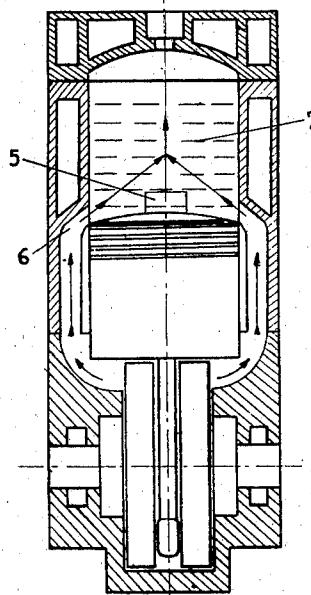


FIG.3

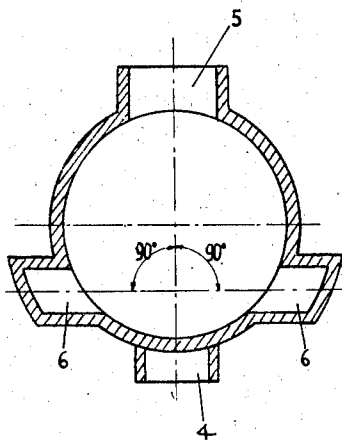
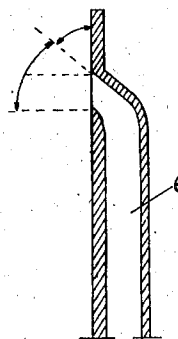


FIG.4



INVENTOR

André Ide

BY

Richard J. Fein

ATTORNEYS

UNITED STATES PATENT OFFICE

2,477,374

TWO-STROKE MOTOR

André Ide, Edegem-Antwerp, Belgium

Application November 5, 1945, Serial No. 626,771
In Belgium November 8, 1944

1 Claim. (Cl. 123-73)

1

This invention concerns improvements in two stroke motors for benzine with carburettor operating according to the known system of pre-compression in the crank case.

This new construction is characterized thereby that:

(1) The overflow channels are constructed funnel-like, so that they work as nozzles (diffusers), whereby during the scavenging greater speed of the gas mixture is obtained;

(2) The scavenging ports (outlet of the overflow channels into the cylinder) are arranged at an angle of 90° with respect to the outlet, so that the fresh gas when flowing over the piston into the cylinder is forced upwards at a determined angle, assuming thereby a fixed flow direction and when striking the rounded compression-chamber returns downwards and then forces before itself the exhaust gases already flowing outwards through the opened outlet port; as soon as the fresh gas has about reached the outlet port the latter is already closed by the piston moving upwards, so that very few or no fresh gas at all is lost;

(3) The scavenging ports are so arranged that at the beginning of the scavenging process, when the outlet is already open for some time and the exhaust gases have thus assumed a certain flow direction, a counter flow with respect to the exhaust gases is induced and simultaneously by the much cooler fresh gas warmth is withdrawn from the exhaust gases, whereby a steam shield is formed between the fresh gas and the exhaust gases, so that combustion of the fresh gas entering the cylinder is excluded.

The invention will be described in the following by way of example in relation with a two cylinder two stroke motor with reference to the accompanying drawings, in which

Figures 1 and 2 give axial sections of the cylinder at 90°, whereas Figure 3 gives a transverse section of the cylinder, which clearly represents the position of the scavenging ports. Figure 4 is a section of one of the overflow channels in the cylinder.

The cylinder 1 is connected with the crank case 2, in which the pre-compression takes place. The piston 3 controls the inlet port 4, the outlet port 5 and the scavenging ports 6, which are formed by the outlet of the overflow channels. This outlet is shaped funnel-like so that the narrowing gives rise to a diffusion effect for the gas mixture. The scavenging ports 6 are thus arranged opposite to each other on either side of the axes of the inlet and outlet ports 4 and 5 at an angle of 90° with respect to these axes.

The scavenging process is thus the following:

The gas mixture pre-compressed in the crank case 2 flows through the two overflow channels 6 over the piston 3 into the cylinder 1. These funnel shaped channels are so arranged that during

2

the scavenging the gas mixture flows upwards at an angle, turns in a determined direction by striking the compression chamber and then forces out before itself the exhaust gas through the outlet port 5. As soon as now the fresh gas mixture has almost reached the outlet port, the latter is closed by the piston moving upwards, so that few or no fresh gas is lost during the scavenging. During the scavenging there is however still more or less burning exhaust gas in the cylinder. Directly it flows into the cylinder the much cooler fresh gas mixture withdraws warmth from the exhaust gas contained there; thereby and mainly due to the special position of the overflow channels a shield 7 forms between the exhaust and the fresh gas, whereby combustion of the fresh gas is prevented. Therewith the exact time of ignition is also in a narrow relation.

I claim:

In a two stroke engine of the class described, a cylinder, a reciprocating piston in said cylinder, an inlet port leading into said cylinder, an exhaust port leading from said cylinder, said exhaust port being diametrically opposite to said inlet port, scavenger channels, two inclined scavenger passages in said cylinder, each said passage leading from one of said channels and opening into said cylinder on each side of said inlet port, the inclination of said passage with respect to a plane perpendicular to the axis of said cylinder being such that the axes of said two passages meet at a point within said cylinder and remote from the top thereof, the axes of said passages being in a plane disposed at right angles to the axes of said inlet port and exhaust port and said last plane being located at a distance from said exhaust port practically equal to the four fifths of the internal diameter of said cylinder.

ANDRÉ IDE.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
1,632,988	Adams	June 21, 1927
2,119,121	Steinlein	May 31, 1938
2,189,357	Cull	Feb. 6, 1940

FOREIGN PATENTS

Number	Country	Date
646,031	France	1928
764,109	France	1934
769,158	France	1934
441,668	Great Britain	1936
468,644	Great Britain	1937
52,707	Denmark	1937
515,452	Great Britain	1939
847,369	France	1939