April 12, 1927. 1,624,024

O. SVENSSON ET AL

FUEL FEEDING DEVICE OF INTERNAL COMBUSTION ENGINES

Filed March 17, 1923

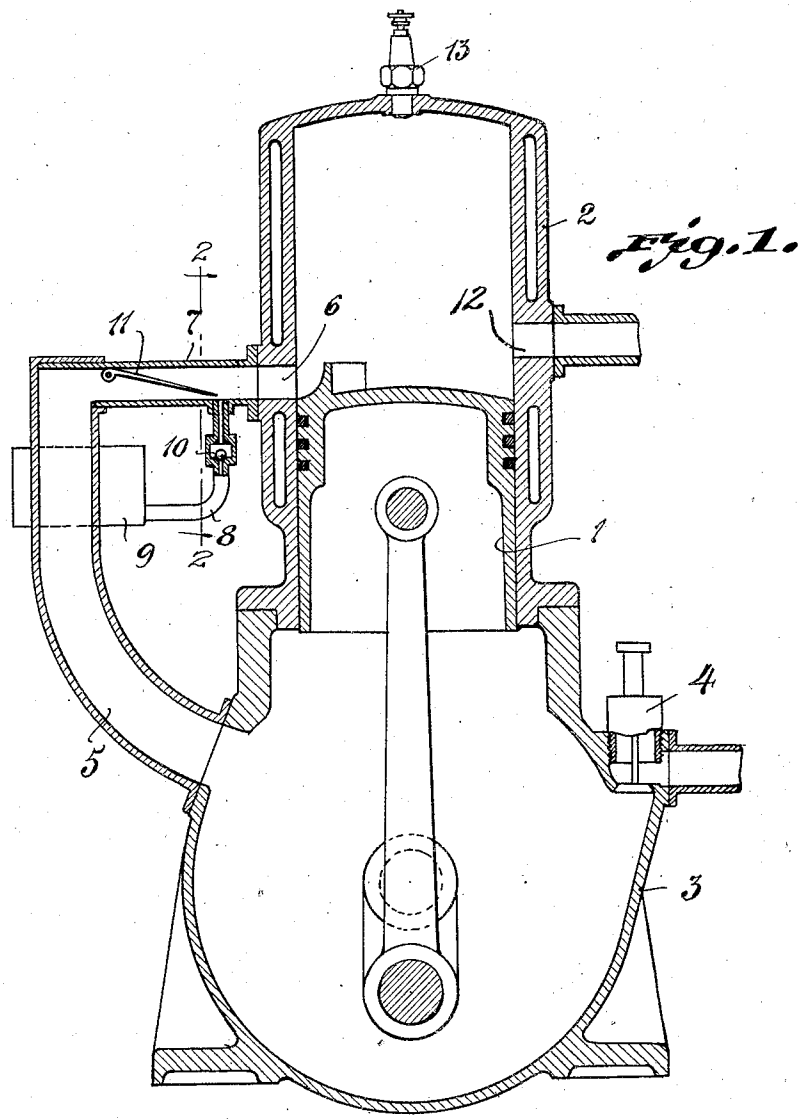


Fig. 1.

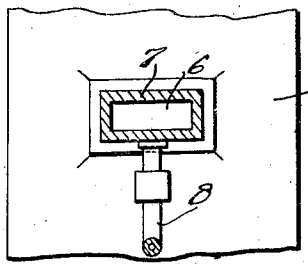


Fig. 2.

INVENTORS
Oskar Svensson
Gustaf Svensson
BY
ATTORNEYS

Patented Apr. 12, 1927. 1,624,024

UNITED STATES PATENT OFFICE.

OSKAR SVENSSON AND GUSTAF SVENSSON, OF DAGLOSEN, SWEDEN.

FUEL-FEEDING DEVICE OF INTERNAL-COMBUSTION ENGINES.

Application filed March 17, 1923, Serial No. 625,815, and in Germany April 18, 1922.

This invention relates to a fuel feeding device for internal combustion engines of the two stroke cycle system. As in engines of a construction before known the fuel inlet is provided in the channel extending from the crank chamber to the working cylinder. According to the invention a part of the said channel has great width and slight height, the fuel inlet being located at the said part, so that the fuel, sucked into the channel by the vacuum in the crank chamber, is spread on a comparatively great surface of the wall of the channel and the air, when afterwards passing from the crank chamber into the cylinder, carries with itself the fuel, thus spread, and divides the same, the fuel and air being thus mingled and constituting an explosive charge. At the said part of the channel, preferably, a throttle member is provided, slanting toward the said fuel inlet and the mouth of the channel, the said member causing the air, leaving the crank chamber, to strike the fuel spread on the wall of the channel, so that the air more forcibly carries with itself the fuel and divides the same.

Fig. 1 shows in vertical cross section an internal combustion engine of the two stroke cycle system arranged in accordance with this invention.

Fig. 2 is a fragmentary cross-section taken on the line 2—2 of Fig. 1.

The piston 1 compresses during its downward stroke in the working cylinder 2 in the ordinary manner the air which during the previous upward stroke of the piston has been sucked into the crank chamber 3 and the lower part of the cylinder 2 through the valve 4. 5 is the channel extending from the crank chamber 3 and put into communication with the working cylinder, as the piston 1, at the end of its downward stroke uncovers the mouth 6. According to the invention a part of the channel 5, preferably the part located immediately before the mouth 6 and designated by 7, is so arranged, that the air compressed in the crank chamber will divide the fuel and be mingled with the same while rushing through the channel. Preferably, the part 7 of the channel is horizontal, the cross section of the same being rectangular, so that the part 7 has a slight height and a great width. By this structure a mixing chamber having a large horizontal diffusion surface is provided, over which the fuel may spread while the air is brought into close contact therewith. In the bottom wall of the channel one or more inlets or mouth pieces for liquid fuel are provided, the said fuel being supplied through a pipe 8, extending, for instance, from a float chamber 9. In the pipe 8 a return pressure valve 10, for instance a ball valve, is provided. In the engine shown in the drawing the part 7 of the channel is provided with a throttle valve 11, located, preferably, immediately before the fuel inlet and consisting of a disk, which is swingably fixed to the top wall of the channel and may be shifted by the operator into a slanting position toward the mouth of the channel.

The engine operates in the following manner. During the partial vacuum created in the crank chamber during the upward stroke of the piston 1, fuel passes into the part 7 of the channel 5 and is spread on the wall of the channel. At the end of the subsequent downward stroke of the piston the mouth 6 of the channel is suddenly uncovered by the piston, which results in the air compressed in the crank chamber rushing through the channel 5 and the portion 7, and into the working cylinder carrying with itself the fuel, which thus is minutely divided by the air and mingled with the same to an explosive charge. The said charge ejects through the opening 12 the gases of combustion resulting from the preceding working stroke, and is then compressed and ignited by a sparking plug 13, effecting the next working stroke of the piston.

The air valve 4 is so arranged, that the tension of its spring may be adjusted. By the said adjustment the length of the period, during which the vacuum in the crank chamber and the channel 5, 7 is so great, that fuel is sucked into the part 7 of the channel, and thus the quantity of fuel for the next charge is adjusted. The disk 11 causes the air current to strike the fuel spread on the bottom of the channel, so that the air more forcibly carries with itself the said fuel and minutely divides the same. Besides by shifting the disk 11 the quantity of air passing through the channel is controlled. Consequently, the charge of the cylinder may be adapted to the varying load of the engine or to a varying number of revolutions. The size of the cross section of the channel, however, may be so carefully adapted, that

no throttle valve is necessary for adapting the charge of the cylinder to the load, for which the engine is constructed.

Experience has proved, that engines, provided with the mixing and feeding device, described above, may be driven by light oil as well as heavy oil and that the charge may be ignited by means of a sparking plug.

The invention may, evidently, be modified in some respect without exceeding the limits of the same. Thus for instance a slidable, curve shaped disk, extending through a slot in the wall of the channel may be substituted for the disk 11.

We claim:

1. In an internal combustion engine having a two-stroke cycle system, a channel extending from the crank chamber to the cylinder, a mixing chamber forming part of the channel, having a substantially plane and horizontal bottom portion, ample width and slight height, a means for spreading fuel on the bottom portion, the chamber therefore operating as an effective surface carburetor.

2. In an internal combustion engine of the two stroke cycle system, having a channel extending from the crank chamber to the cylinder and an inlet for the fuel leading to the said channel, a mixing chamber forming part of the channel and having a substantially plane and substantially horizontal bottom and further a great width, the chamber thus operating as surface carburetor in association with a throttle baffle member located in the said channel and directing the air, passing from the crank chamber toward the fuel spread on the bottom of the mixing chamber.

In witness whereof, we have hereunto signed our names.

OSKAR SVENSSON.
GUSTAF SVENSSON.