F. W. SCHULTZ & F. B. LAWSON.

TWO-CYCLE ENGINE.

APPLICATION FILED MAY 11, 1914.

1,148,720.

Patented Aug. 3, 1915.

Fig. 1.

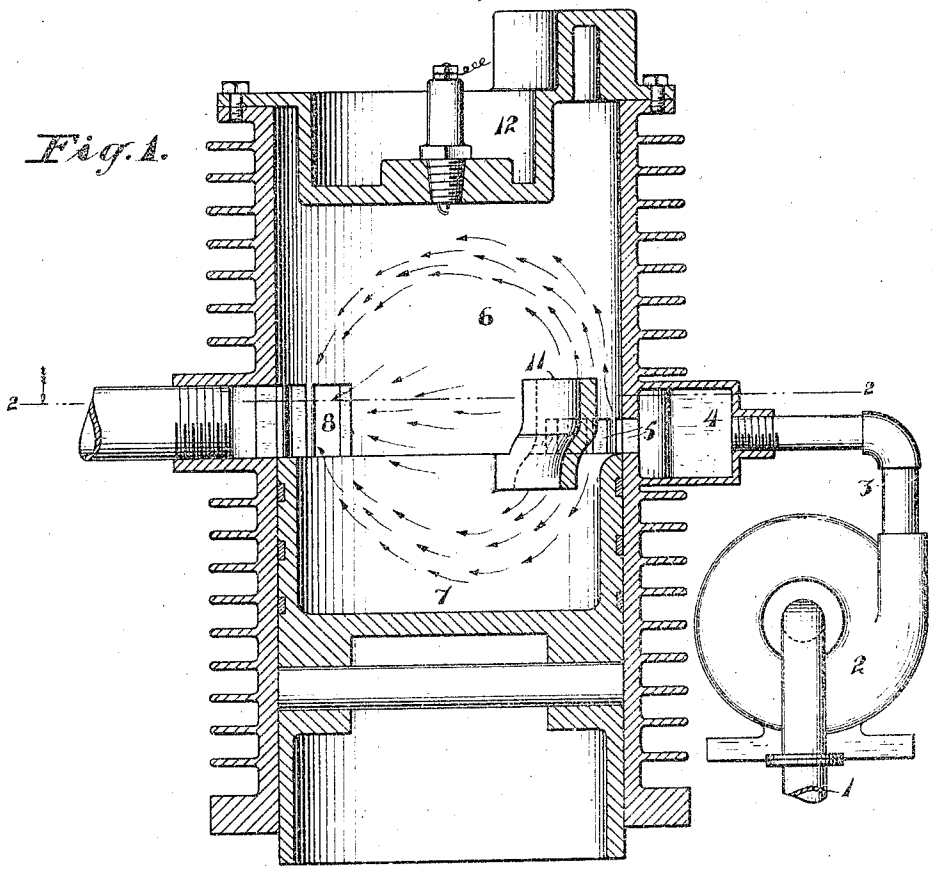
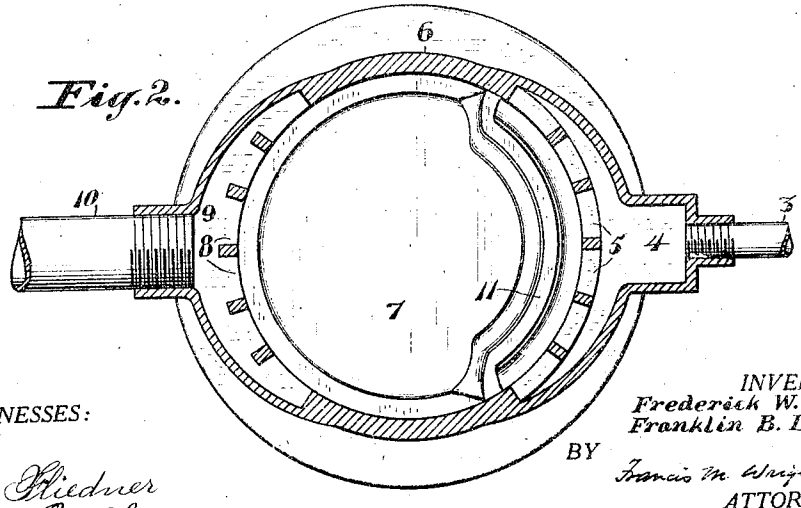


Fig. 2.



WITNESSES:

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TWO-CYCLE ENGINE.

1,148,720. Specification of Letters Patent. Patented Aug. 3, 1915.

Application filed May 11, 1914. Serial No. 837,748.

To all whom it may concern:

Be it known that we, FREDERICK W. SCHULTZ and FRANKLIN B. LAWSON, citizens of the United States, residing at San Francisco, county of San Francisco, and State of California, have invented new and useful Improvements in Two-Cycle Engines, of which the following is a specification.

The object of the present invention is to provide an improved form of two-cycle internal combustion engine, which will have high efficiency, and no complications due to valve trouble, and be light in proportion to its power.

In the accompanying drawing, Figure 1 is a vertical section of the cylinder of our improved engine; Fig. 2 is a horizontal section thereof on the line 2—2 of Fig. 1.

Referring to the drawing, 1 indicates a pipe, leading from a carbureter or any other device for producing a gas mixture, to the inlet of a turbine blower 2 of a sufficient number of stages to obtain the necessary pressure, or any rotary blower or other device of sufficient capacity and pressure, a pipe 3 leading from the outlet of said blower to a chamber 4 around the intake ports 5 of a cylinder 6. In said cylinder can reciprocate a piston 7, which in its reciprocation opens and closes both said ports 5 and exhaust ports 8 leading into an exhaust chamber 9 connected to an exhaust pipe 10. To said piston is secured, preferably by being formed integral therewith, a deflector 11 which extends opposite, or in proximity to, the intake ports, and rises above the edge of the hollow piston as well as extends below said edge, the portion within the piston being spaced therefrom substantially the same distance as the outer portion is spaced from the cylinder, so that gases injected through the intake ports are deflected substantially equally both inward and outward. Thus the deflector is of an approximately ogee form, as shown. The cylinder head 12 is formed to receive the piston and the deflector.

Any suitable means of preventing back firing in the case of imperfect mixture may be placed in the chamber 4, which also serves as a reservoir for a charge of gas when the ports 5 are covered by the piston 7.

In operation, when the intake and exhaust ports are opened by the downward movement of the piston, the waste gases in the center of the cylinder, which are opposite said exhaust ports, are the first to flow out therefrom. The other waste gases, in the ends of the cylinder, flow toward the center, and their place is taken at both ends of the cylinder by the incoming fuel mixture. By this construction then perfect scavenging is effected in both ends of the cylinder. This principle of construction is adaptable to either single or double acting internal combustion engines using gas or any low grade gaseous fuel, either with single or multiple cylinders of any modern standard type.

It will be evident that the construction gives greater efficiency and fewer complications from valve troubles, since all valves are dispensed with, except the control by the piston of inlet and exhaust ports. Furthermore, crank case compression or charging cylinders are done away with.

We claim:—

1. In a two-cycle engine, a cylinder having intake and exhaust ports, a piston arranged to close said ports, its entire outer face being concave, and a deflector carried thereby the edge of which nearer to the piston is spaced from the piston to permit the fuel mixture to pass into said concavity.

2. In a two-cycle engine, a cylinder having intake and exhaust ports, a piston arranged to close said ports, and a deflector carried thereby the edge of which nearer to the piston is spaced from the piston and is curved away from the intake port.

3. In a two-cycle engine, a cylinder having intake and exhaust ports, a hollow piston arranged to close said ports, and a deflector carried thereby extending into the cavity thereof, and spaced from the edge of the piston both above and below said edge to provide outer and inner paths between the intake and exhaust ports for the fuel mixture.

4. In a two-cycle engine, a cylinder hav-

ing intake and exhaust ports, a hollow piston arranged to close said ports, and a deflector carried thereby extending both above and below the edge of the piston, the part of the deflector within the piston being spaced substantially the same distance therefrom as the part without is spaced from the cylinder.

In testimony whereof we have hereunto set our hands in the presence of two subscribing witnesses.

FREDERICK W. SCHULTZ.
FRANKLIN B. LAWSON.

Witnesses:
FRANCIS M. WRIGHT,
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