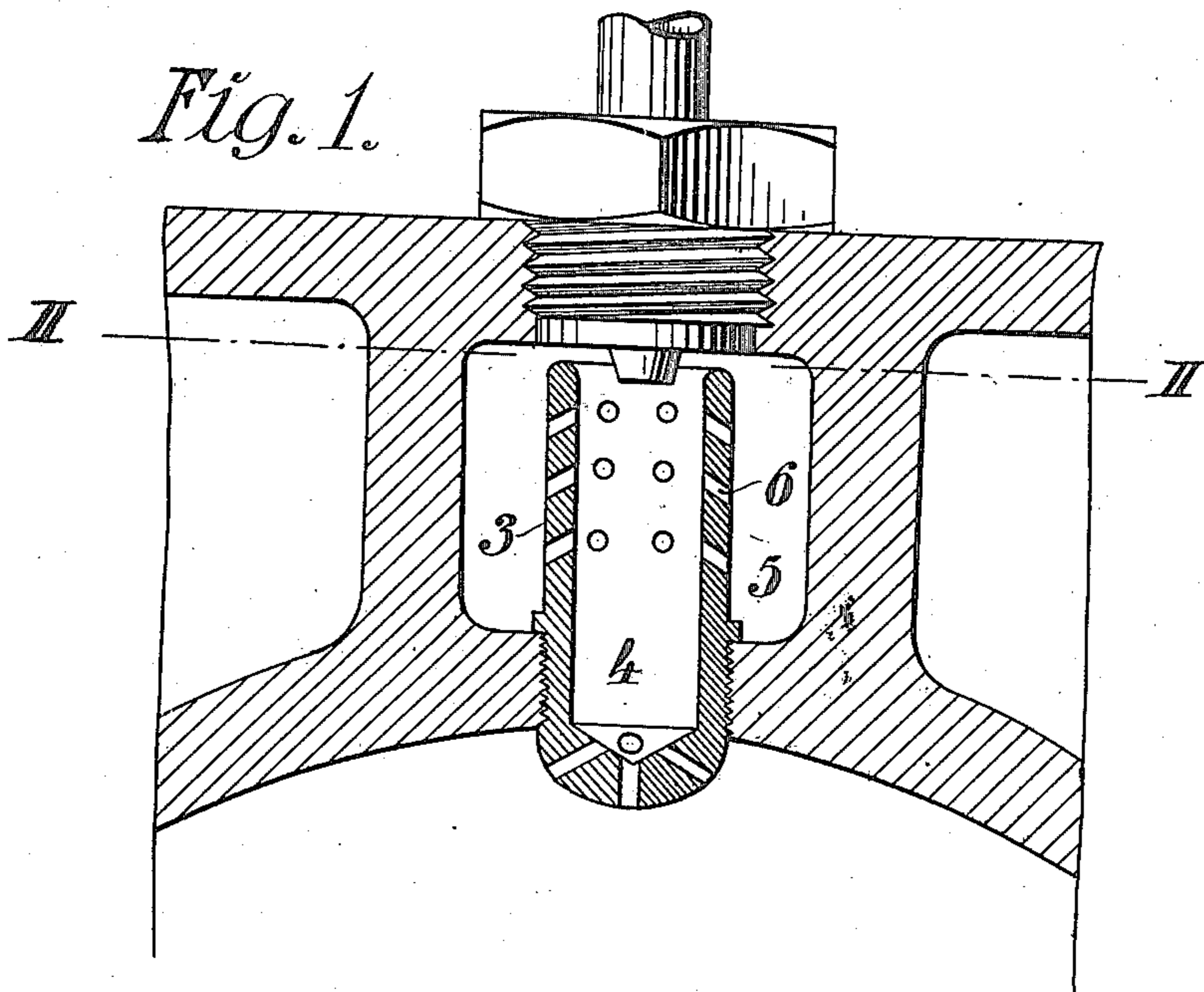


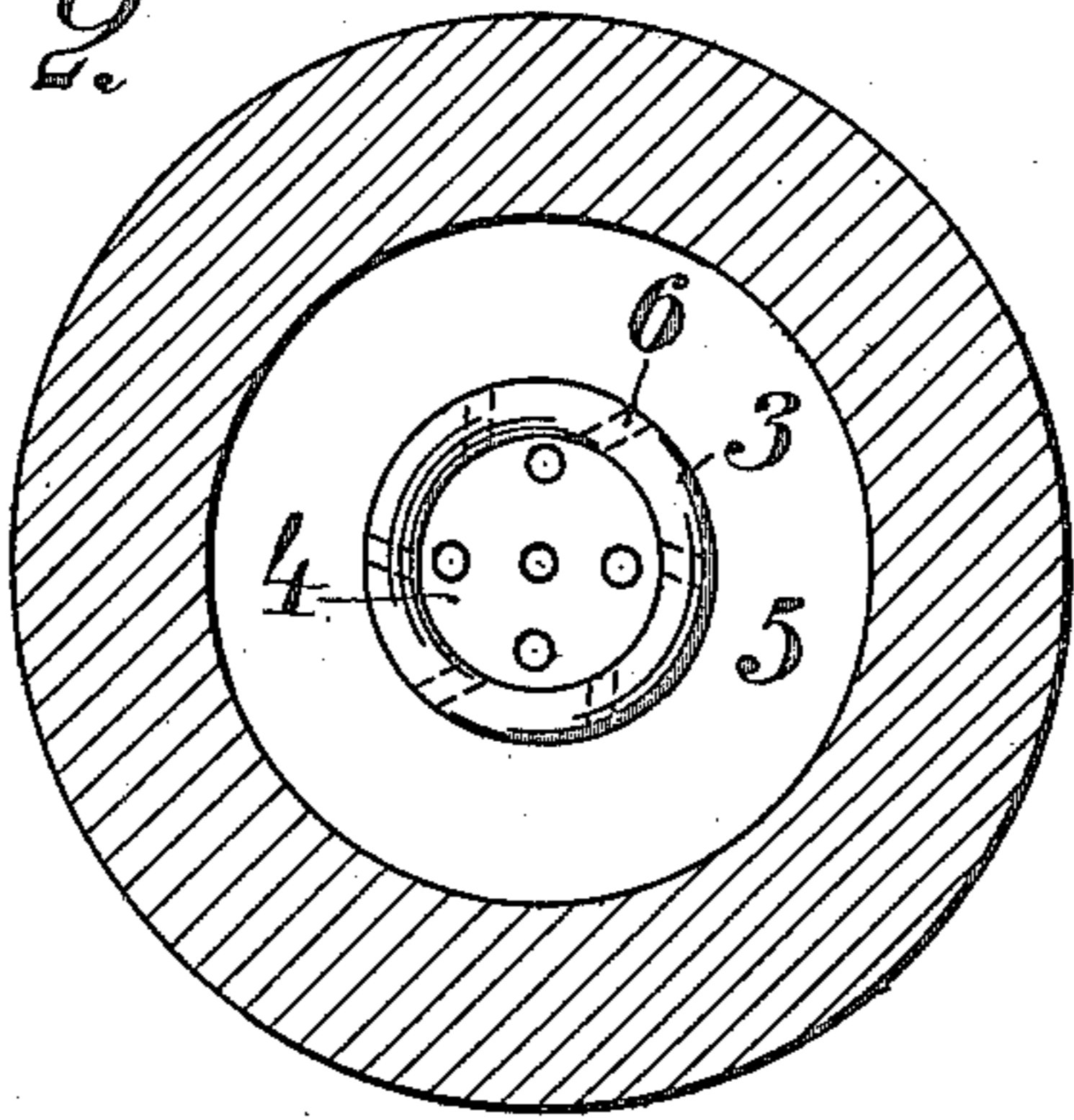
H. F. LEISSNER.  
INTERNAL COMBUSTION ENGINE.  
APPLICATION FILED JULY 16, 1917.

1,260,408.

Patented Mar. 26, 1918.



*Fig. 2.*



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# UNITED STATES PATENT OFFICE.

HARRY FERDINAND LEISSNER, OF LJUSNE, SWEDEN.

## INTERNAL-COMBUSTION ENGINE.

1,260,408.

Specification of Letters Patent. Patented Mar. 26, 1918.

Application filed July 16, 1917. Serial No. 180,925.

*To all whom it may concern:*

Be it known that I, HARRY FERDINAND LEISSNER, a citizen of the Kingdom of Sweden, residing at Ljusne, Sweden, have  
5 invented new and useful Improvements in Internal-Combustion Engines, of which the following is a specification.

This invention relates to internal combustion engines of the kind set forth in the U. S. Patent Nr. 1,136,818 in which liquid fuel  
10 is used and in which the combustion chamber of the engine is in permanent open communication with a primary explosion chamber divided by means of a sleeve into two  
15 compartments, one inside and one outside the sleeve, the compartment inside the sleeve being in direct communication with the combustion chamber, while the compartment outside the sleeve is connected with that inside  
20 the sleeve by means of apertures formed in the wall of the sleeve.

In such an engine the fuel is sprayed from a nozzle directly into the compartment of the primary explosion chamber inside the  
25 sleeve at the moment of highest compression so that the fuel is ignited immediately thereby effecting a preexplosion in the said inner compartment. By this preexplosion part of the fuel is forced into the compartment  
30 outside the sleeve by way of the said apertures, such fuel serving to scavenge the first-mentioned compartment of the primary explosion chamber during the expansion stroke.

The principal object of the invention is to facilitate and accelerate the mixing of the fuel injected by the preexplosion into the compartment of the primary explosion chamber outside the sleeve with the air  
40 contained in said compartment.

Another object of the invention is to increase the rapidity with which the equalization of the pressures in the two compartments of the primary explosion chamber  
45 takes place.

With these objects in view the invention consists in this that the apertures formed in the wall of the sleeve and connecting the two compartments of the primary explosion  
50 chamber with each other extend obliquely through such wall in order that the gas mixture passing through said apertures from one compartment into another may be caused to perform a rotary movement in  
55 the latter compartment.

The invention is illustrated on the accompanying drawing in which Figure 1 shows a longitudinal section through part of the cylinder head of an internal combustion engine provided with a primary explosion  
60 chamber according to this invention. Fig. 2 is a cross-section on the line II—II of Fig. 1.

Referring to the drawing, the sleeve 3 dividing the primary explosion chamber into two compartments 4 and 5 is provided  
65 with a number of apertures 6 extending obliquely through the wall of the sleeve in such a manner as to cause the gas mixture passing through said apertures from the compartment 4 into the compartment 5,  
70 due to the preexplosion, to perform a rotary movement in the last-mentioned compartment thereby mixing itself rapidly with the air contained in said compartment. When flowing back through the compartment  
75 4 into the cylinder as the pressure therein falls during the expansion stroke, the fuel will, of course, also be caused to perform a rotary movement in the compartment 4 which results in an effective scavenging  
80 of this compartment.

In order to obtain a very rapid equalization of the pressures in the chambers 4 and 5 the apertures 6 may also extend obliquely  
85 with regard to the longitudinal direction of the sleeve, either as shown in Fig. 1 or in the opposite way.

Having now described my invention, what I claim as new and desire to secure by Letters Patent is:  
90

In an internal combustion engine, the combination of a combustion chamber, a primary explosion chamber, a sleeve in permanent communication with the former and extending into the latter and dividing it into  
95 two compartments, one outside and one inside said sleeve; the sleeve being provided with apertures which extend obliquely through its wall and connect the said compartments, whereby gas mixture passing  
100 through said apertures is caused to perform a rotary movement in the compartment into which it is discharged, and a fuel nozzle opening into the compartment inside the sleeve.  
105

In testimony whereof I have signed my name.

HARRY FERDINAND LEISSNER.