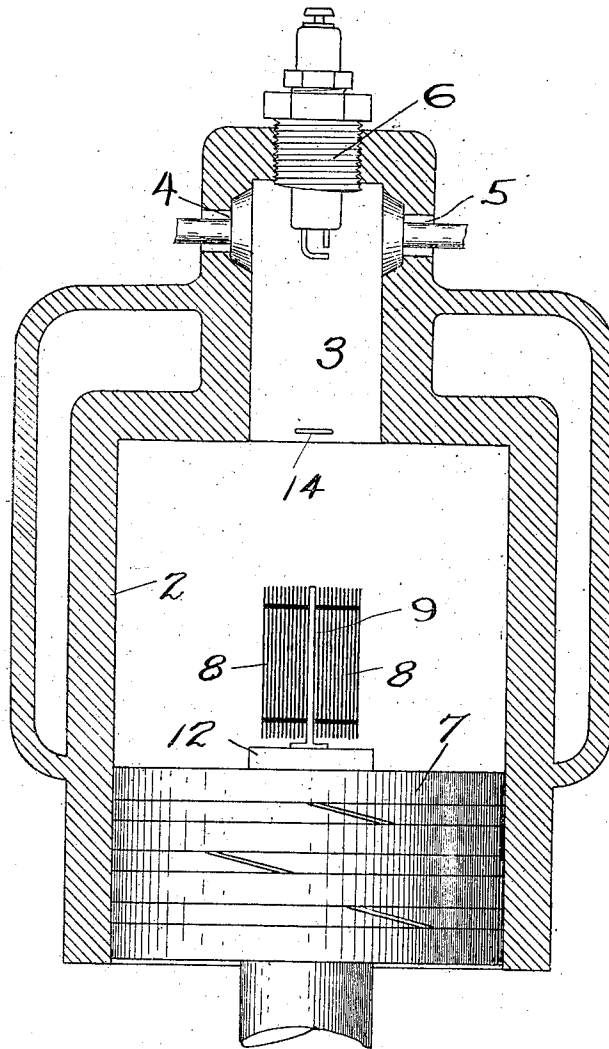


G. A. KROHN.
INTERNAL COMBUSTION ENGINE.
APPLICATION FILED APR. 25, 1912.

1,156,298.

Patented Oct. 12, 1915.



WITNESSES

H. G. Frost.
H. A. Scholten.

INVENTOR

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UNITED STATES PATENT OFFICE.

GUSTAVE A. KROHN, OF COARSEGOLD, CALIFORNIA

INTERNAL-COMBUSTION ENGINE.

1,156,298.

Specification of Letters Patent.

Patented Oct. 12, 1915.

Application filed April 25, 1912. Serial No. 693,101.

To all whom it may concern:

Be it known that I, GUSTAVE A. KROHN, a citizen of the United States, and a resident of Coarsegold, Madera county, State of California, have invented certain new and useful Improvements in Internal-Combustion Engines, of which the following is a specification.

The invention relates to internal combustion engines and particularly to means for igniting the charge of combustible in the cylinder.

The object of the invention is to provide means whereby the explosive charge in the cylinder is ignited under compression by the heat of the preceding explosion or explosions.

Reference is now had to the accompanying drawing which illustrates one embodiment of my invention, the figure being a vertical section through one cylinder showing the application of my invention thereto.

The cylinder 2 is provided at its upper end with a chamber 3 in which may be arranged for convenience the air inlet port 4 and the exhaust port 5. A spark plug 6, or other ignition device is also generally located in the chamber 3, to provide the necessary means for igniting the charge in the cylinder when the engine is started and during that time when it is comparatively cold. This ignition device is not part of my invention and is not used after the engine has become sufficiently heated.

Arranged on the piston 7 and securely attached thereto are a plurality of thin metallic plates 8, spaced apart from each other and arranged preferably in a vertical position. In the drawing I have shown the plates attached to a central plate or standard 9 which is secured to the piston and preferably thermally insulated therefrom by a block 12 of asbestos or similar material.

The plates 8 are made of a metal having the power of rapidly absorbing heat when subjected to a higher temperature and of rapidly losing heat when subjected to a lower temperature. These plates are comparatively thin and are spaced from each

other so that they may quickly absorb or lose substantially large quantities of heat. The plates are arranged on the piston so that when it reaches the end of its movement upward the plates lie in the chamber 3.

The cylinder shown in the drawings is particularly adapted to be used for burning oil fuel which is injected into the cylinder through the port 14 so that it strikes the edges of the plates 8, preferably at their lower ends.

The plates 8 become heated to a comparatively high degree at each explosion of the charge in the cylinder, and a large proportion of this heat is discharged prior to the explosion of the succeeding charge. This radiated heat together with the heat produced in compressing the air in the cylinder, raises the temperature of the air to such degree that the fuel is ignited as it is injected into the cylinder. The fuel is injected at or substantially at the point of highest compression in the cylinder at which time the temperature of the air in the cylinder is sufficient to immediately ignite the injected charge. The charge is therefore fired without the aid of any external ignition means. The charge of fuel is injected into the cylinder under high pressure in the form of a spray so that combustion is immediate and complete. The fuel spray is directed against the edges of the plates and the fuel on contact with the plates is immediately volatilized, so that the explosion occurs simultaneously throughout the chamber. Since the plates move vertically with respect to the fuel inlet and the time of fuel injection may vary with relation to the position of the piston, the plates are arranged vertically so that the fuel is always projected against all of the plates.

I claim:

In an internal combustion engine, a cylinder having a chamber formed in the end thereof, a piston in said cylinder, a plurality of vertically arranged thin metallic plates spaced apart from each other arranged on said piston and thermally insulated therefrom, said plates being arranged

to lie in said chamber when the piston reaches the end of its stroke, means for introducing air into said cylinder and a port arranged in the lower end of said chamber
5 adapted to permit a charge of combustible to be projected against the edges of said plates.

In testimony whereof I have hereunto set my hand at San Francisco, California, this 19th day of April 1912.

GUSTAVE A. KROHN.

In presence of—

H. G. PROST,
P. T. PIDWELL.