Aug. 14, 1923. 1,464,906

P. HENTSCHKE

DIESEL ENGINE

Filed Jan. 20, 1920

Fig. 1

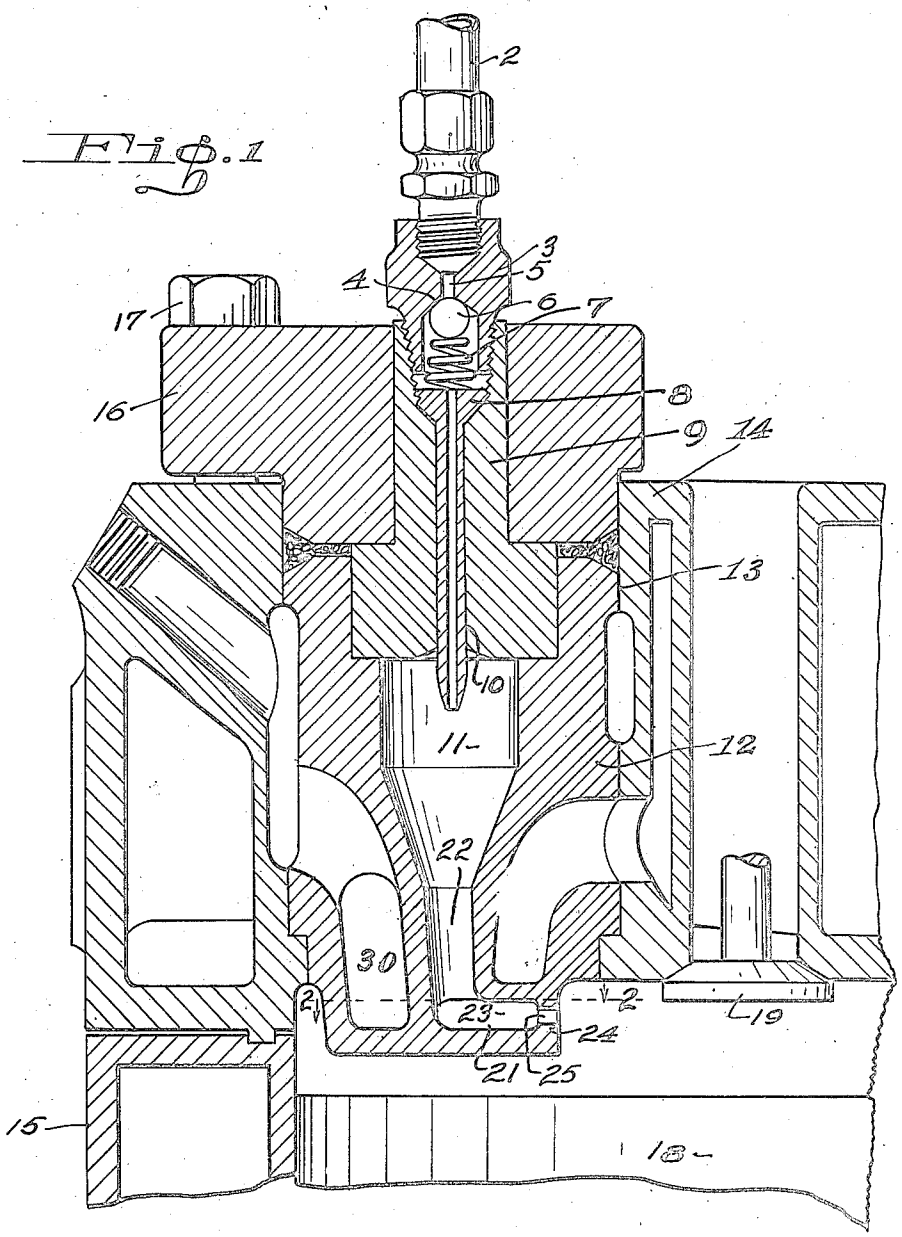
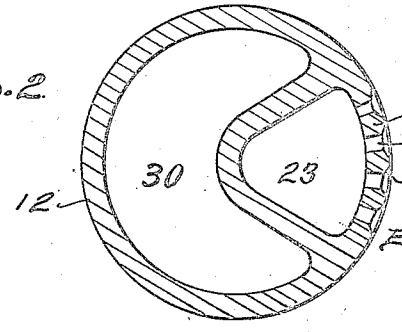


Fig. 2



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UNITED STATES PATENT OFFICE.

PAUL HENTSCHKE, OF LOS ANGELES, CALIFORNIA.

DIESEL ENGINE.

Application filed January 20, 1920. Serial No. 352,782.

To all whom it may concern:

Be it known that I, PAUL HENTSCHKE, a citizen of Germany, residing at Los Angeles, in the county of Los Angeles and State of California, have invented new and useful Improvements in Diesel Engines, of which the following is a specification.

This invention relates to improvements in prime motors and has for its object to improve the construction of oil burning or hydrocarbon engines of the Diesel type, and particularly to provide an engine of this character that will operate with facility on a two-stroke cycle and four-stroke cycle and has for its object to eliminate the use of ignition devices in engines of this type; and to provide for an initial ignition or expulsion of fuel from a pocket into the piston cylinder of the engine. The invention consists of the construction, the combination, and in details and arrangements of the parts, an embodiment of which is illustrated in the accompanying drawings and described and claimed herein.

Figure 1 is a sectional view of the upper portion of the piston cylinder of an engine showing in detail the construction of the fuel atomizing and heating device.

Fig. 2 is a transverse section on line 2—2 of Fig. 1.

The engine of the present invention is of the type in which a low gravity fuel oil is supplied in intermittent charges through the feed pipe 2, entering a block 3 having a valve seat 4 surrounding the passage way 5, which is closed by the outward movement of a valve member 6 in the form of a ball supported on an expansile spring 7, the lower end of which bears, for instance, on the upper end of a nozzle 8 that is removably mounted in a bushing 9, longitudinally and centrally bored at 10 to receive the nozzle 8 which projects downwardly into a chamber 11 formed in a removable block 12 fitted into a bore 13 in the head 14 of the engine casing or cylinder 15.

The block 12 is removably mounted in the bore 13 and may be secured in place below a retainer 16 bolted or otherwise suitably secured at 17 to the cylinder head 14. Within this cylinder is operative the usual piston 18, which, on the downward stroke, may operate to open an air inlet valve 19 and on the return stroke compresses the air under the head of the cylinder.

An important feature of the present invention is to provide for the retention of the successive charges of fuel introduced into the chamber 11 from the nozzle 8 so that gases therefrom will be readily ignited when the pressure in the cylinder reaches a predetermined degree combined with the temperature of the block 12 and this ignition of a charge in the chamber 11 will result in the expulsion of the non-ignited vapors from the chamber 11 in an atomized condition into the power chamber in which the piston operates. This retention of fuel is secured by providing at the bottom of the chamber 11 a basin 21 in the form of a shallow recess formed below the contracted passage way 22 at the lower end of the chamber 11 and which passage way discharges into an enlarged pocket 23 Fig. 2 the bottom of which forms a basin 21, the front portion of the basin being formed by a lip or wall 24 shown as provided with apertures 25, radially disposed and having their outer ends flared or enlarged as at 26 to facilitate the issue and expansion of the liquids, vapors, and gases, as they are forced out of the pocket 23 by the pre-ignition of the vapors of the oil in the basin 21.

The upper body portion of the block 12 is made of predetermined and calculated thickness so as to retain a suitable degree of heat to cooperate with the heat of compression of the air charged in the expulsion or piston chamber when a portion of this compressed fluid or air in the chamber 11 reaches an igniting point. This initial ignition causes the expansion of the vapors and gases and their discharge from the chamber 11 carrying with them the liquid from the basin 21, the whole passing rapidly and in a thoroughly carbureted condition through the apertures 25 into the piston chamber where the maximum expansion effect of the igniting vapors operate in the usual manner impulsively on the piston.

It is understood that the engine casing and cylinder head may be cooled in the usual manner by the introduction of a cooling medium as water into the water spaces provided as indicated.

One of these water spaces is a passageway 30 formed in block 12 and surrounding the lower portion of chamber 11. The circulation of water through this passageway will assist in maintaining the desired temperature in chamber 11. It will be noted that the lower end of block 12 which carries the

basin 23 and the spray nozzles 25 extends within the working cylinder of the engine, and that water passageway 30 is continued into this projecting portion of block 12 so as to extend around the basin.

Various modifications may be made without departing from the spirit of my invention as claimed.

I claim.

1. In an internal combustion engine of the "Diesel" type; an expansion chamber with its piston; and a chamber in communication with the expansion chamber and adapted to receive and retain successive charges of fuel, the said charges being successively expelled from the receiving chamber in an atomized condition when the vapors or gases arising from the charges in the receiving chamber are ignited by the combined temperatures of compression and absorptions in the operation of the engine; said receiving chamber comprising an elongated passage having a fuel inlet at its upper end and tapering downwardly in size to a second elongated passage leading to a basin-like bottom to retain a charge momentarily and having spraying apertures through which the charge is ejected when the degree of temperature in the receiving chamber ignites the combustible vapors or gas arising from the successive charges of fuel.

2. In an internal combustion engine of the Diesel type having an expansion chamber with its piston, the combination of a fuel inlet; and vaporizing means comprising a heat retaining element having a fuel receiving chamber therein, said chamber comprising an elongated passage communicating at its upper end with the fuel inlet, and tapering downwardly to a second elongated passage, said element having a water space surrounding the fuel receiving chamber, and said chamber having a basin like bottom communicating with said second passage, the fuel in the receiving chamber adapted to be ignited by the heat of compression and cause the fuel contained in the basin like bottom to be expelled in a vaporized condition into the expansion chamber.

In testimony whereof I have signed my name to this specification.

PAUL HENTSCHKE.