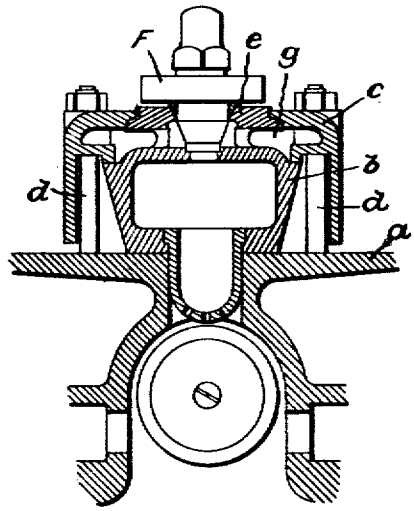
Feb. 16, 1932. F. MODERSOHN 1,845,620

PRECOMBUSTION CHAMBER FOR AIRLESS INJECTION OIL ENGINES

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UNITED STATES PATENT OFFICE

FRITZ MODERSOHN, OF BERGISCH-GLADBACH, NEAR COLOGNE-ON-THE-RHINE, GERMANY, ASSIGNOR TO MOTORENFABRIK DEUTZ, AKTIENGESELLSCHAFT, OF COLOGNE-DEUTZ, GERMANY

PRECOMBUSTION CHAMBER FOR AIRLESS INJECTION OIL ENGINES

Application filed November 12, 1926, Serial No. 147,940, and in Germany February 3, 1926.

It is well known that oil engines have been fitted with pre-combustion-chambers, in which the injector such as a spray valve is cooled by being inserted into a space filled with cooling water. This cooling space can be designed to be a part of the pre-combustion chamber both being in one piece. This makes a costly casting apart from the disadvantage of a complicated shape with inaccessible hollow parts. It is not easily or quickly replaced which is an important item when only indifferent and unskilled attendance is available.

The present invention avoids these disadvantages by the simple expedient of fixing the pre-combustion-chamber in the cylinder-casting by means of a ring-shaped piece serving also as cover to the cooling water space in which the spray-valve is inserted. It is an advantage to shape the ring-piece in such a way that its outer wall extends down to the bottom of the pre-combustion chamber so that the latter is enclosed by a guarding wall. In this way the combustion-chamber is an extremely simple and cheap part which can be easily replaced after removing the ring-shaped piece if varying conditions and fuels should require this.

The ring-piece is easily removable thus making the cooling water space completely accessible for cleaning. The outer wall of the ring-piece encloses the pre-combustion chamber and provides a guard against contact with the hot wall. The appearance is also improved as the pre-combustion-chamber-walls are liable to become scaled through the heat of operation.

It is also an advantage—especially with horizontal engines—to have the cooling-space of the spray-valve separate from the cylinder-cooling space, because to withdraw the ring-piece requires only draining off the small quantity of cooling water in the spray-valve space leaving the cooling water space of the cylinder or cylinder-head as it is.

The accompanying drawing shows a suggested specimen of design embodying the invention.

The pre-combustion-chamber *b* is fitted to the cylinder-head *a* by means of the ring-piece or wall member *c* surrounding it and bolts *d*. It carries a collar *e* resting on ribs and this collar is designed to accommodate the spray valve *f*. The cooling water-space *g* between pre-combustion-chamber *b* and ring-piece *c* is made tight through the machined facings of *b* and *c* and the packing between *c* and *e*. When the engine is operating the heat is transmitted directly and indirectly through the bottom and top surfaces of the chamber *b* which only expands in the direction of the axis of the cylinder. Any additional stresses are taken up by the bolts *d*. Dangerous heat stresses are therefore avoided which would not be the case when pre-combustion-chamber and spray-valve are cast in one with consequent hot inner walls and cooled outer parts which must result in heavy strains in the connecting material. The design of the collar *e* can be such that the spray-valve and the chamber are not separated if the cooling water space is opened by lossening bolts *d* and taking off ring *c*.

I am aware that the invention may be embodied in other specific forms without departing from the spirit or essential attributes thereof, and I therefore desire the present embodiment to be considered in all respects as illustrative and not restrictive, reference being had to the appended claims rather than to the foregoing description to indicate the scope of the invention.

I claim as my invention:

1. The combination of a cylinder; a precombustion chamber communicating with the interior of said cylinder; a spray valve opening into said precombustion chamber; a collar embracing said spray valve and provided with ribs engaging said precombustion chamber to postion said spray valve relative thereto; and a wall member surrounding said spray valve and engaging said collar and said precombustion chamber to form with said spray valve and with the wall of said precombustion chamber a water jacket for said spray valve.

2. A Diesel type engine having, in combination, a cylinder, a member formed to provide a pre-combustion chamber having inlet and outlet openings, said member formed sep-

arately from said cylinder and detachably supported on the head of the latter with said outlet opening in communication with said cylinder, a spray-valve in registry with said inlet opening, and a removable wall member surrounding said spray-valve in spaced relation to said first mentioned member and forming with the latter a water jacket for said pre-combustion chamber and said valve.

3. A Diesel type engine having, in combination, a cylinder, a member formed to provide a pre-combustion chamber having inlet and outlet openings, said member formed separately from said cylinder and detachably supported on the head of the latter with said outlet opening in communication with said cylinder, a spray-valve in registry with said inlet opening, a removable wall member surrounding said spray-valve in spaced relation to said first mentionel member and forming with the latter a water jacket for said pre-combustion chamber and said valve, and securing means engaging said wall member and cylinder for detachably securing said wall member and pre-combustion chamber in assembled relation with each other and said cylinder.

4. A Diesel type engine having, in combination, a cylinder, a member formed to provide a pre-combustion chamber having an inlet opening in its upper wall and an outlet opening in its lower wall, said member formed separtely from said cylinder and supported on the head of the latter with said outlet opening in communication with said cylinder, a detachable wall member above the upper wall of said first mentioned member in spaced relation thereto so as to provide a water jacket, said wall member having an opening in alignment with said inlet opening, a spray-valve extending through said opening in said wall member into registry with said inlet opening, a spray-valve supporting member carried by the upper wall of said first mentioned member, said supporting member cooperating with said wall member to seal said opening of the latter against leakage and to permit removal of said wall member without removal of said spray-valve.

5. A Diesel type engine having, in combination, a cylinder, a member formed to provide a pre-combustion chamber having inlet and outlet openings, said member formed separately from said cylinder and detachably supported on the head of the latter with its lateral walls exposed with respect to said head, said outlet opening being in communication with said cylinder, a spray-valve in registry with said inlet opening, a removable wall member surrounding said spray-valve in spaced relation to said first mentioned member and forming with the latter a water jacket for said pre-combustion chamber and valve, said wall member having a skirt portion surrounding said lateral walls of said pre-combustion chamber in spaced relation thereto.

6. A Diesel type engine having, in combination, a cylinder, a member formed to provide a pre-combustion chamber having inlet and outlet openings, said member formed separately from said cylinder and detachably supported on the head of the latter with its lateral walls exposed with respect to said head, said outlet opening being in communi- wall member surrounding said spray-valve in registry with said inlet opening, a removable wall member surounding said spray-valve in spaced relation to said first mentioned member and forming with the latter a water jacket for said pre-combustion chamber and valve, said wall member having a skirt portion surrounding said lateral walls of said pre-combustion chamber in spaced relation thereto, and securing means engaging said wall members and cylinder for detachably securing said wall member and pre-combustion chamber in assembled relation with each other and said cylinder.

7. A Diesel type engine having, in combination, a cylinder, a member formed to provide a pre-combustion chamber having an inlet opening in its upper wall and an outlet opening in its lower wall, said member formed separately from said cylinder and supported on the head of the latter with its lateral walls exposed with respect to said head, said outlet opening being in communication with said cylinder, a detachable wall member above the upper wall of said first mentioned member in spaced relation thereto so as to form a water jacket, said wall member having an opening in alignment with said inlet opening, a spray-valve extending through said opening in said wall member into registry with said inlet opening, a spray-valve supporting member carried by the upper wall of said first mentioned member, said supporting member cooperating with said wall member to seal said opening of the latter against leakage and to permit removal of said wall member without removal of said spray-valve, said wall member having a skirt portion surrounding said lateral walls of said first mentioned member in spaced relation thereto.

8. A Diesel type engine having, in combination, a cylinder, a member formed to provide a pre-combustion chamber having an inlet opening in its upper wall and an outlet opening in its lower wall, said member formed separately from said cylinder and supported on the head of the latter with its lateral walls exposed with respect to said head, said outlet opening being in communication with said cylinder, a detachable wall member above the upper wall of said first mentioned member in spaced relation thereto so as to form a water jacket, said wall member having an opening in alignment with

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

DR. FRITZ MODERSOHN.

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CERTIFICATE OF CORRECTION.

Patent No. 1,845,620. Granted February 16, 1932, to

FRITZ MODERSOHN.

It is hereby certified that error appears in the printed specification of the above numbered patent requiring correction as follows: Page 2, line 75, claim 6, after the syllable "communi" insert the syllable and words cation with said cylinder, a spray-valve in registry with said inlet opening, a removable, and same claim, lines 77 and 78, strike out the words "registry with said inlet opening, a removable wall member surrounding said spray-valve in", and line 86, for "members" read member; and that the said Letters Patent should be read with these corrections therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 29th day of March, A. D. 1932.

(Seal)

M. J. Moore,
Acting Commissioner of Patents.

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