Dec. 8, 1936. R. B. OTWELL 2,063,825

AUTOMOBILE HEATER

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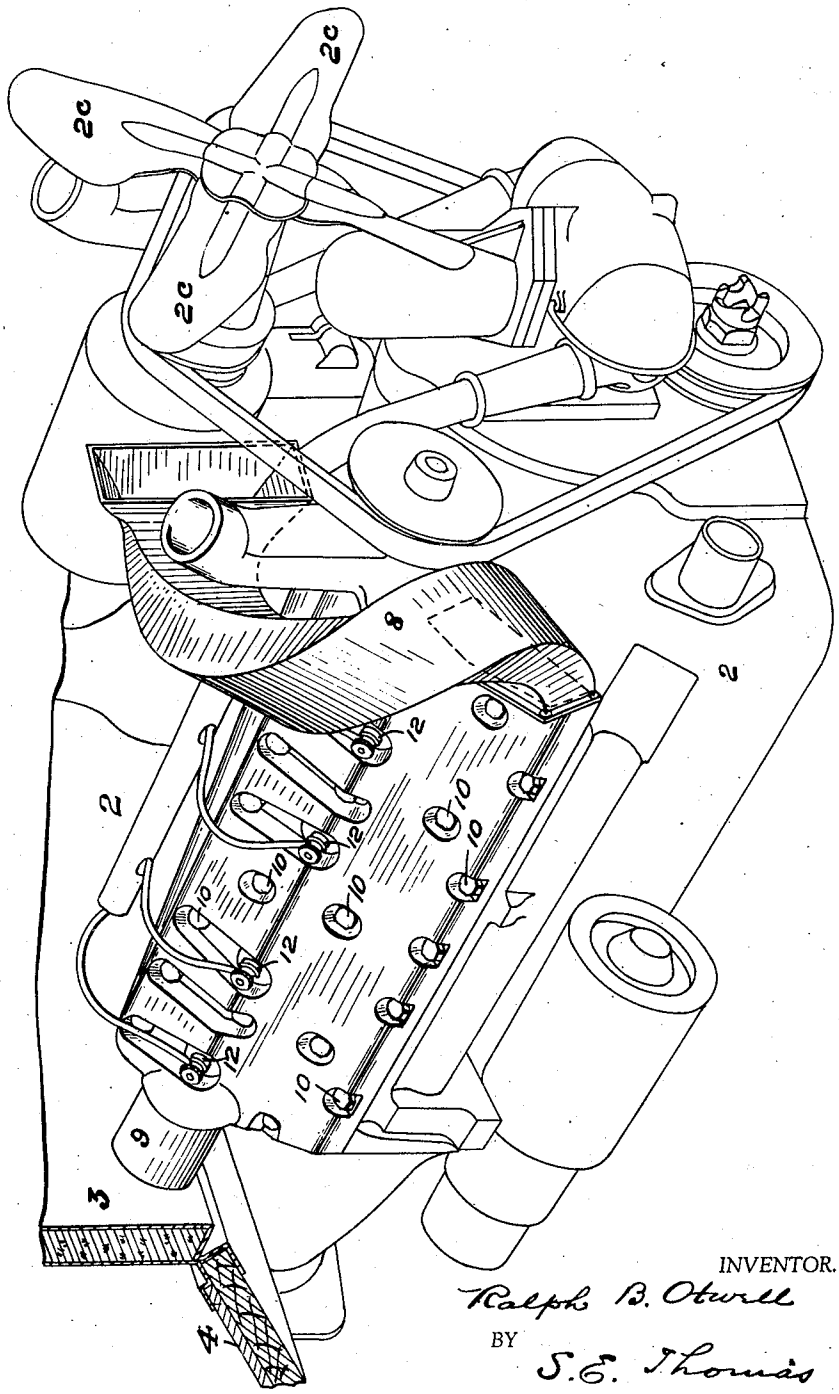


Fig. 1.

INVENTOR.
Ralph B. Otwell
BY
S. E. Thomas
ATTORNEY.

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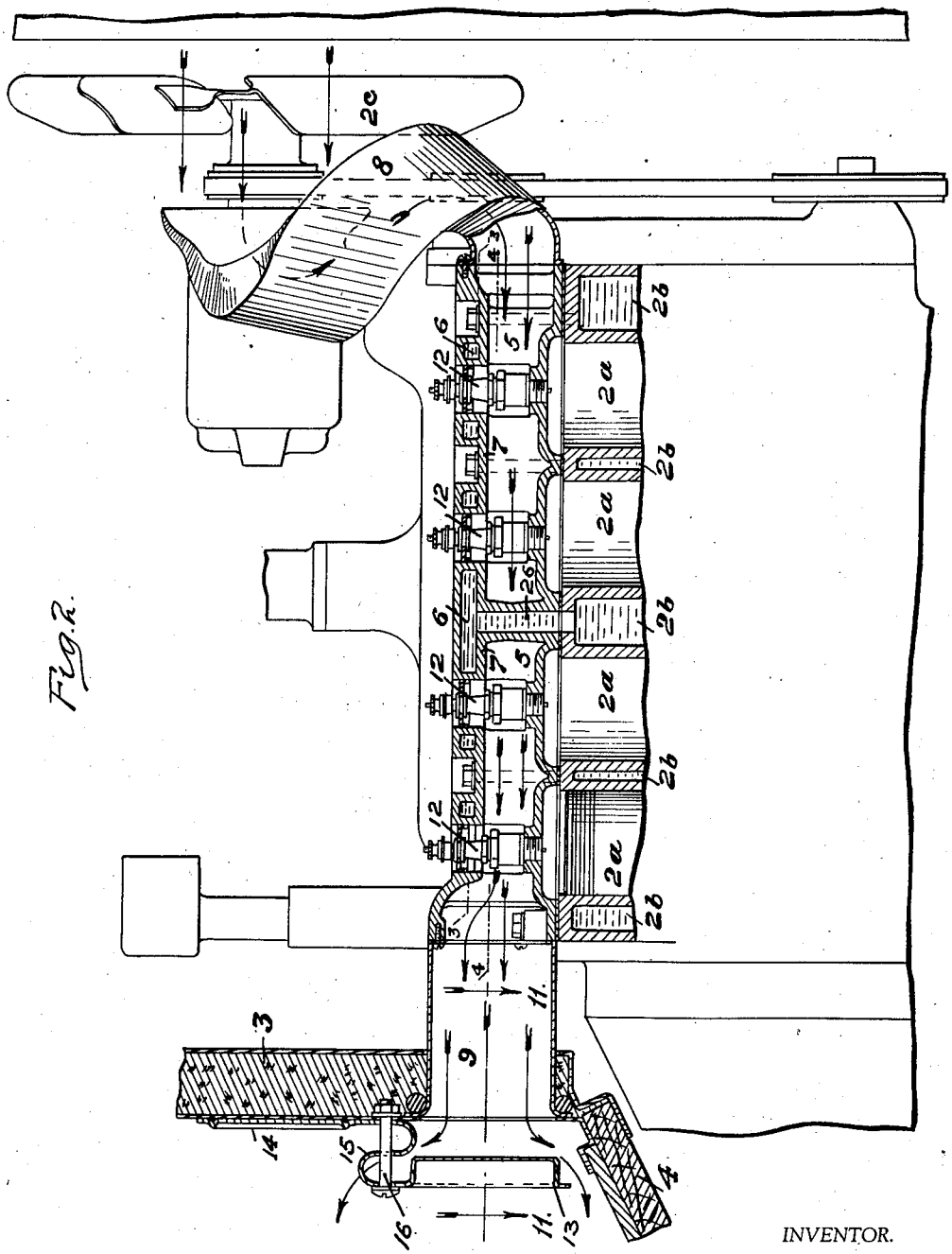


Fig. 2.

INVENTOR.
Ralph B. Otwell
BY
S. E. Thomas
ATTORNEY.

Dec. 8, 1936. R. B. OTWELL 2,063,825

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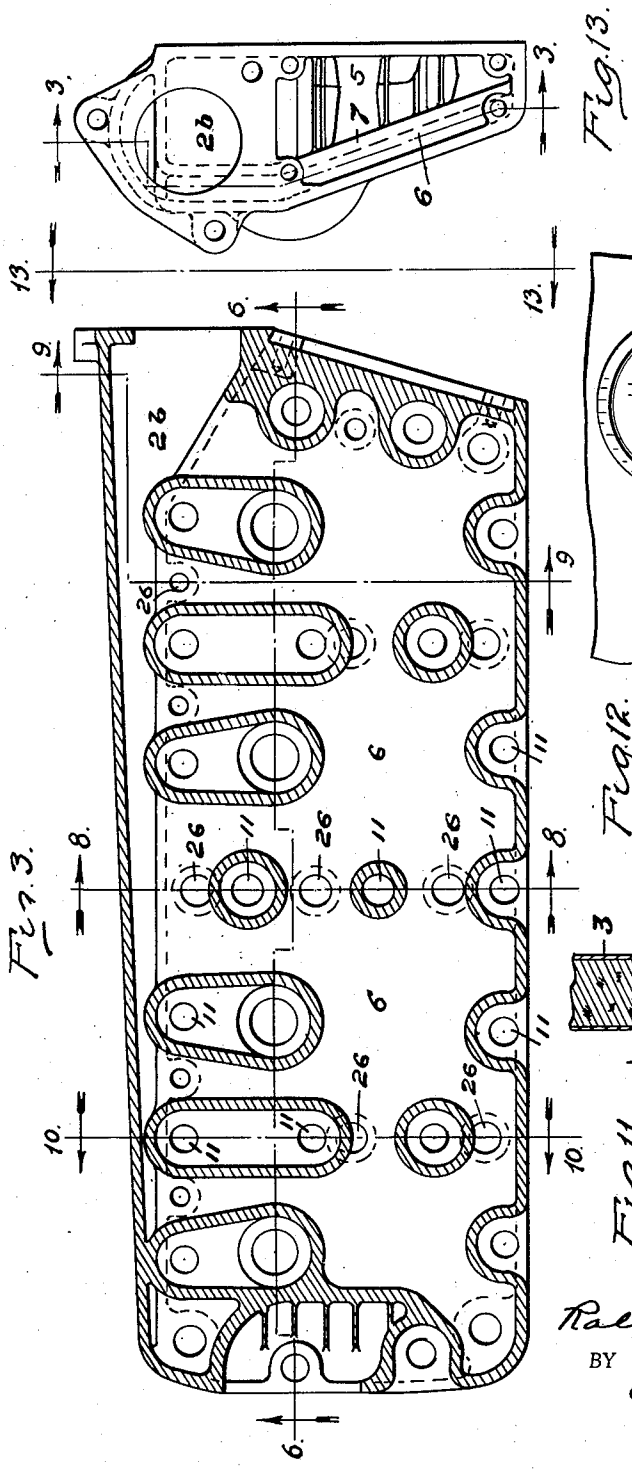


Fig. 13.

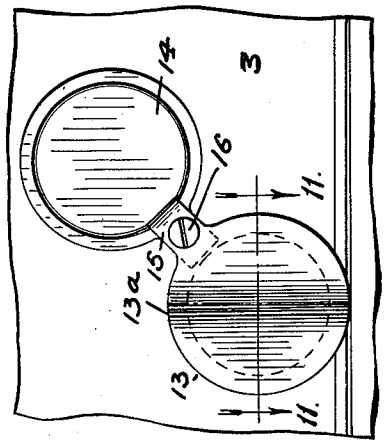


Fig. 12.

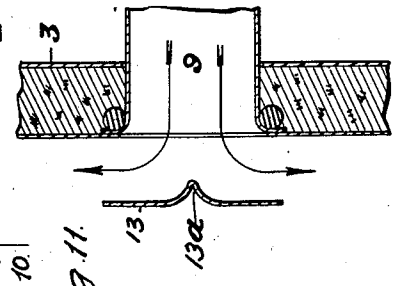


Fig. 11.

INVENTOR.
Ralph B. Otwell
BY
S. E. Thomas
ATTORNEY.

Dec. 8, 1936. R. B. OTWELL 2,063,825

AUTOMOBILE HEATER

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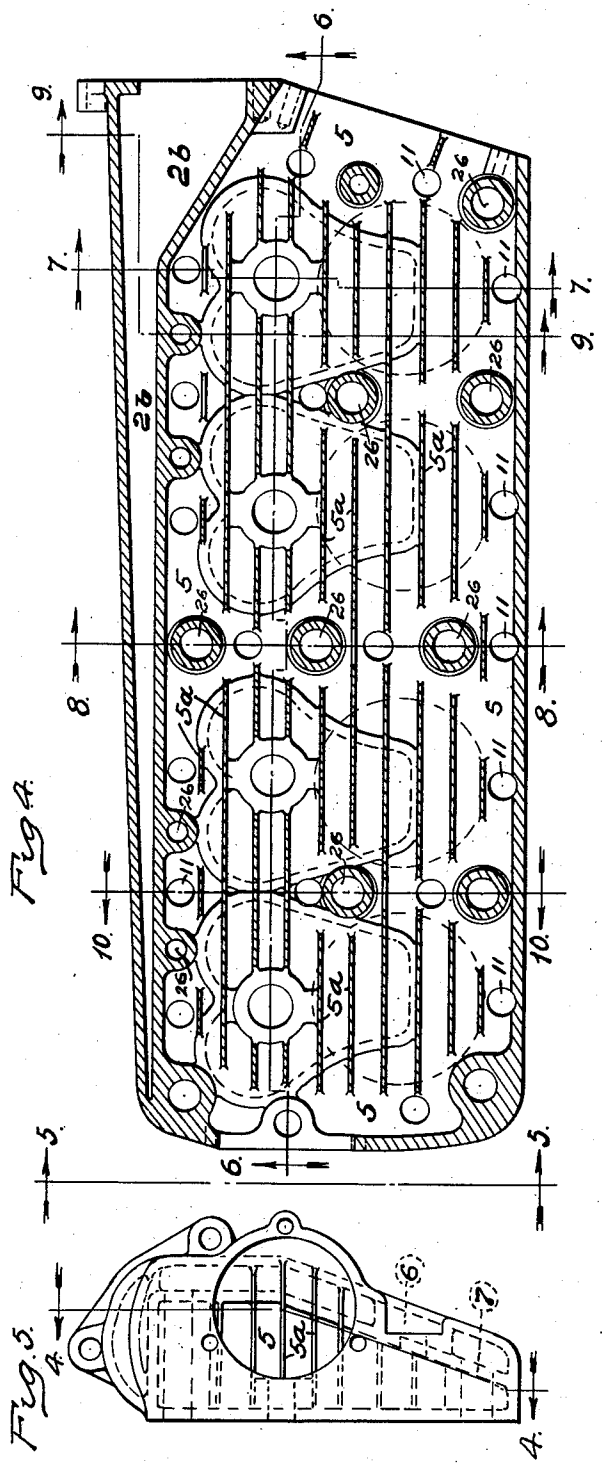


Fig. 4.

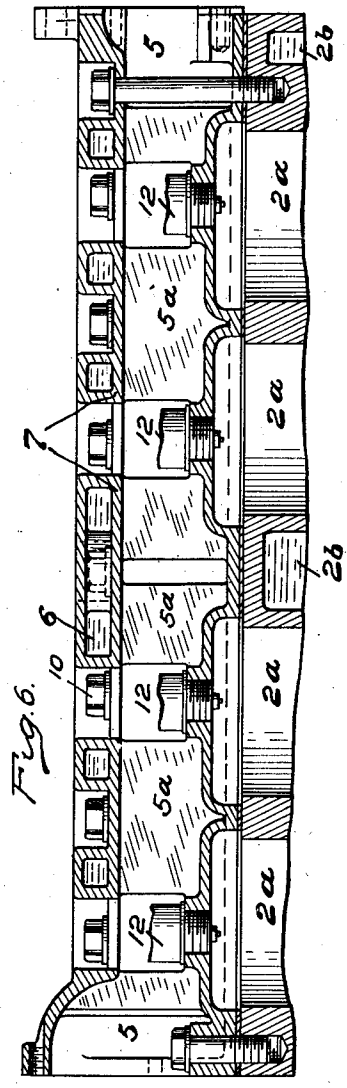


Fig. 6.

Fig. 5.

INVENTOR.
Ralph B. Otwell
BY
S. E. Thomas
ATTORNEY.

Dec. 8, 1936. R. B. OTWELL 2,063,825

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Fig. 7.

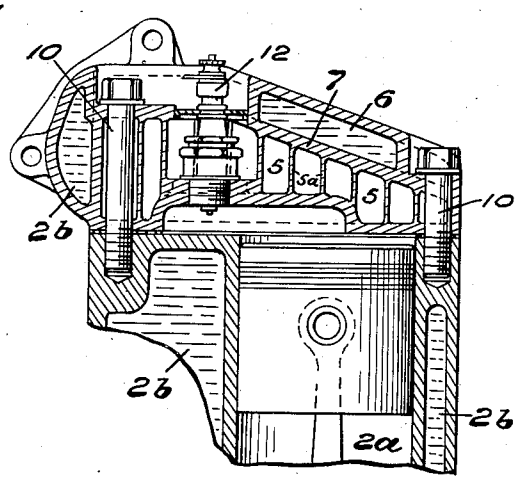


Fig. 8.

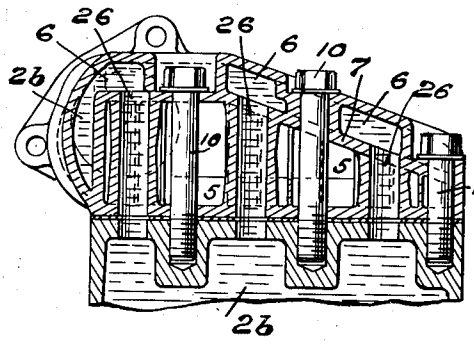


Fig. 9.

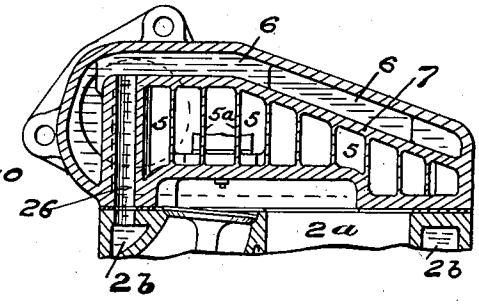
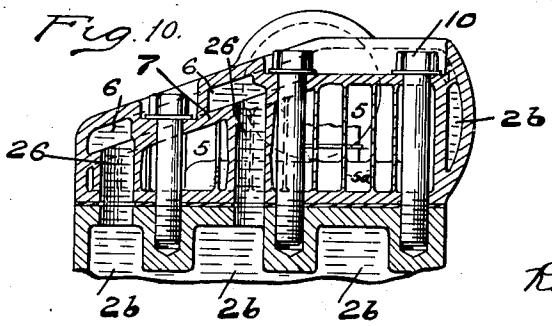


Fig. 10.



INVENTOR.

Ralph B. Otwell

BY

S. E. Thomas

ATTORNEY.

Patented Dec. 8, 1936 2,063,825

UNITED STATES PATENT OFFICE

2,063,825

AUTOMOBILE HEATER

Ralph B. Otwell, Detroit, Mich.

Application May 3, 1935, Serial No. 19,654

8 Claims. (Cl. 123—170)

My invention relates to apparatus for heating automobiles, and an object of my improvements, is to supply a cylinder head which is designed to replace that now in use, to provide a heating means for the interior of an automobile.

The accompanying drawings show a construction embodying my invention, adapted to replace the cylinder head of a Ford V-8, for an example.

Figure 1 is a perspective view of a power plant having a cylinder head embodying my invention thereon,—and a portion of the foot board and dash of an automobile to show its connection therewith.

Figure 2 is a sectional elevation, the section being substantially in a plane through the spark plugs.

Figure 3 is a section of the cylinder head taken on or about line 3—3 Figures 2 and 13.

Figure 4 is a horizontal section of the cylinder head on the line 4—4 Figure 2.

Figure 5 is an elevation from the position indicated by the arrows 5—5 Figure 4.

Figure 6 is a section on the line 6—6 Figure 4.

Figure 7 is a section on the line 7—7 Figure 4.

Figure 8 is a section on the line 8—8 Figure 4.

Figure 9 is a section on the line 9—9 Figure 4.

Figure 10 is a section on the line 10—10 Figure 4.

Figure 11 is a detail section in the plane 11—11 of Figures 2 and 12.

Figure 12 is a detail elevation looking toward the right of Figure 11.

Figure 13 is an elevation of Figure 3 looking from the position indicated by the arrows 13—13.

The numeral 2 denotes the power plant, the cylinders of which are indicated by 2*a*, and the water space by 2*b*. The numeral 2*c* indicates the cooling fan. The numeral 3 designates the dash, and 4 the foot-board.

The cylinder head is divided into a lower and an upper compartment, respectively indicated by 5 and 6, by a horizontal partition 7. The compartment 5 extends longitudinally through the head, and is continued at one end in a spiral conduit 8, which has its open end in position to receive a current of air from the fan 2*c*, and at the other end in a conduit 9, which opens through the dash 3. The water space in the upper compartment 6 is connected with the water space 2*b* by a number of vertical passages 26, see Figures 2, 8, 9, and 10.

The numerals 5*a* indicate fins extending between the partition 7 and the lower wall of the compartment 5 and integral therewith. These fins extend parallel to each other and in a direction longitudinal of the chamber 5 and serve to brace and strengthen the said partition and wall and to transfer heat to a current of air passing through said compartment.

The head is secured in position in the usual way by conventional lag-bolts 10 passing through bolt holes 11 in the head, and the spark-plugs 12 also pass through vertical apertures in the head into the cylinders in the usual way.

Numerals 13 and 14, Figures 2, 11, and 12, indicate two discs united by an S-spring 15 so as to extend in parallel planes and in opposite directions. These discs are secured to the dash-board 3, by a bolt 16 passing through the S-spring 15, midway between the two discs and perpendicular to the planes of said discs. The bolt 16 is secured to the dash-board 3, so that the discs shall turn about it to come axially in line with the conduit 9 and act as valves to control or modify the passage of air through said conduit. These discs 13 and 14 are differently shaped. The disc 13 has a diametral ridge 13*a* V-shaped in cross section formed therein. The S-spring connection 15, holds one of said discs close to the surface of the dash-board and the other is spaced therefrom, as shown in Figure 2.

The cylinder head is an aluminum casting and the bracing fins 5*a* make it practicable to construct the lower wall of the passage 5 very thin where it comes over the combustion chambers of the cylinder, thus the heat is quickly carried to the current of air in said passage. The other walls being provided with hot water jackets will not allow the heat acquired by the current of air to pass therethrough.

It will now be evident that by constructing the cylinder head as provided in the present embodiment, heat may be taken quickly and directly from the wall of the combustion chamber and delivered into the car, before the cooling liquid lowers its temperature to any extent—and by making provision, as disclosed, for the cooling liquid to carry the heat from the combustion chamber into the cooling system when not required to heat the body of the car,—an outstanding advantage has been gained by the present invention over the indifferent results heretofore secured through heaters employing the exhaust gases of an engine to heat the air delivered into the body of the vehicle.

What I claim is:—

1. In a water-cooled engine having an internal combustion chamber, an air passage having a wall in common with said combustion chamber; and a superimposed water passage having a lower

wall in common with the air passage, whereby the air may attain a higher temperature than the cooling water; and means for causing a current of air to pass through said air passage between the combustion chamber and the water jacket.

2. In a water-cooled engine; a cylinder head having an air passage over a wall common with the wall of the combustion chamber of the engine and a water passage above the air passage connected with a water jacket of the engine; and means for causing a current of air to pass through said air passage, whereby the air may be subjected directly to the heat of the combustion chamber.

3. In a water-cooled engine having a cylinder head with an air passage directly over a wall common with the wall of the combustion chamber, said air passage having integral vertical bracing and heat-diffusing fins, extending between the upper and lower wall of the air passage; whereby air in circulating through the air passage and around the heat-diffusing fins may be exposed to a greater heating surface and thereby attain a relatively higher temperature.

4. In a water-cooled engine having a plurality of cylinders, a cylinder head having a water jacket connected with a water jacket of the engine, and an air passage beneath the water jacket of the cylinder head, having a wall in common with the wall of the combustion chamber of the engine; vertical bracing and heat-diffusing fins between the upper and lower walls of the air passage, whereby air in circulating through said passage and around said heat-diffusing fins may be subjected to a larger heating surface and thereby attain a relatively high temperature; and means for forcing a current of air to pass through said air passage, over the wall of the combustion chamber, and between the combustion chamber and the water jacket of the cylinder head.

5. In a water-cooled engine, a cylinder head having an air passage between the combustion chamber and a superimposed water jacket integral with the combustion chamber of the engine; a cooling fan for causing a current of air to be delivered into the air passage of the cylinder head over a wall common to both the air passage and the combustion chamber, whereby the air may be heated directly through the wall of the combustion chamber to a relatively high temperature.

6. In a water-cooled engine comprising a plurality of cylinders; a cylinder head having an air passage therethrough, the lower wall of said passage forming the end walls of the cylinders, the upper wall of said passage forming the lower wall of a water jacket communicating with a water jacket of the cylinders, whereby the air passing through the air passage over the wall of the combustion chamber of the cylinder head may be discharged at a relatively high temperature; and means for forcing a current of air through said passage.

7. In a water-cooled engine having a plurality of cylinders; an aluminum cylinder head, having an air passage therethrough, the lower wall of the air passage being relatively thin and forming the end wall of the combustion chamber of the engine; said cylinder head having also a water jacket above the air passage separated from said air passage by the upper wall of the latter, said water jacket communicating with a water jacket of the engine; strengthening and heat-radiating fins extending between the upper and lower walls of the air passage, whereby a current of air passing through the air passage and heated through the wall of the combustion chamber and heat-radiating fins may be discharged at a higher temperature than the cooling water.

8. In a water-cooled engine having an internal combustion chamber; a cylinder head having a water jacket communicating with the water jacket of the cylinders, also an air passage having a wall in common with the end wall of the combustion chamber, and means for forcing a current of air through the air passage over the wall common to both the combustion chamber and air passage, whereby the air may be heated to a relatively high temperature.

RALPH B. OTWELL.