J. V. CARON.

INTERNAL COMBUSTION ENGINE.

APPLICATION FILED AUG. 23, 1915.

1,195,441.

Patented Aug. 22, 1916.

3 SHEETS—SHEET 1.

Fig. 1

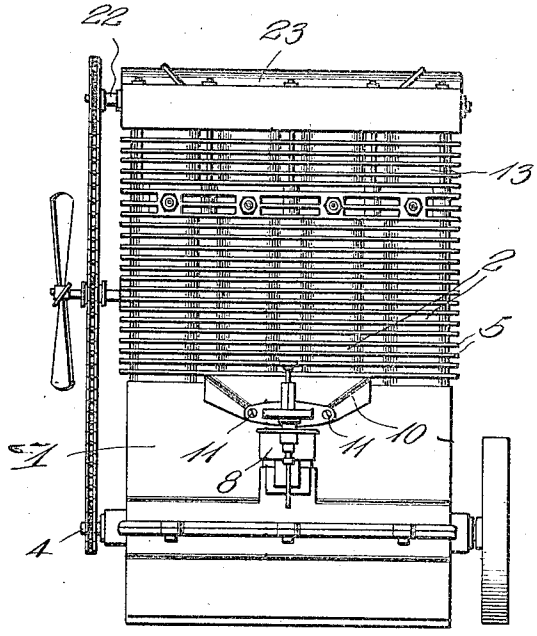
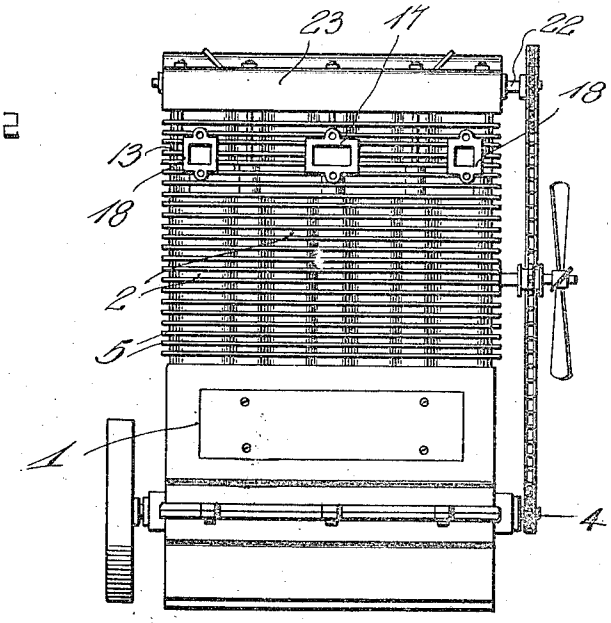


Fig. 2



Witnesses

H. Woodard

Inventor

J. Victor Caron

By H. B. Williamson & Co

Attorneys

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3 SHEETS—SHEET 2.

FIG. 5

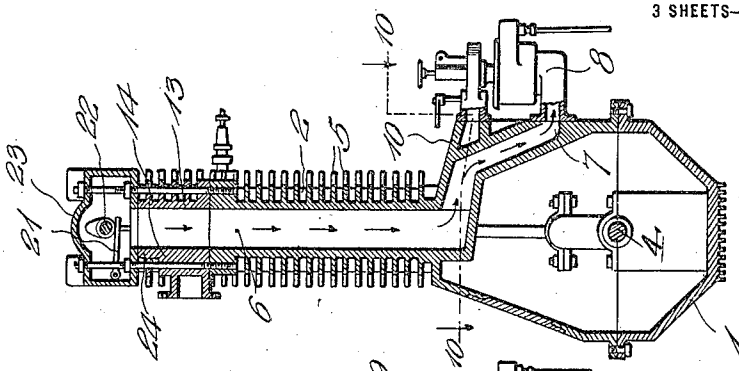


FIG. 4

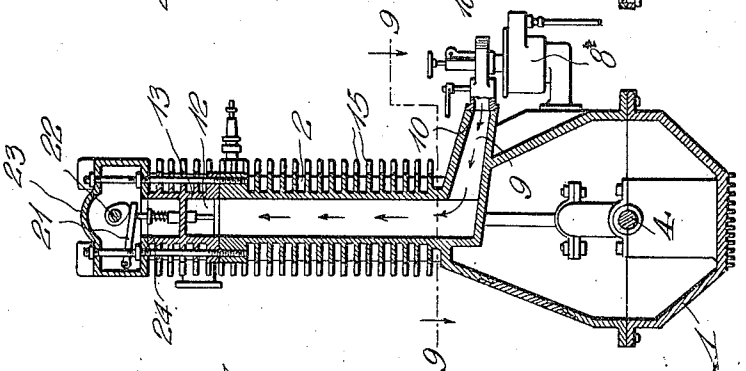
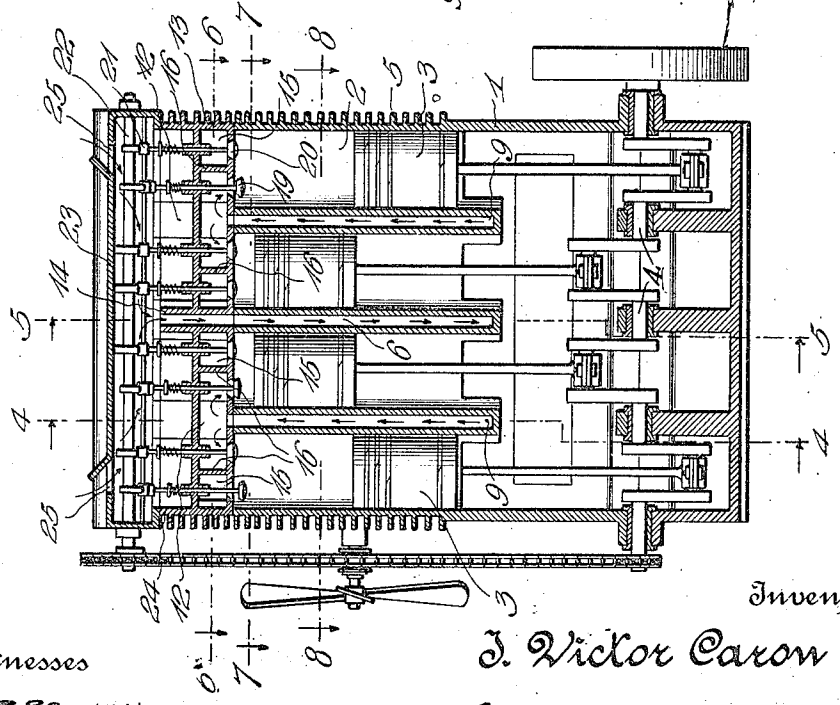


FIG. 3



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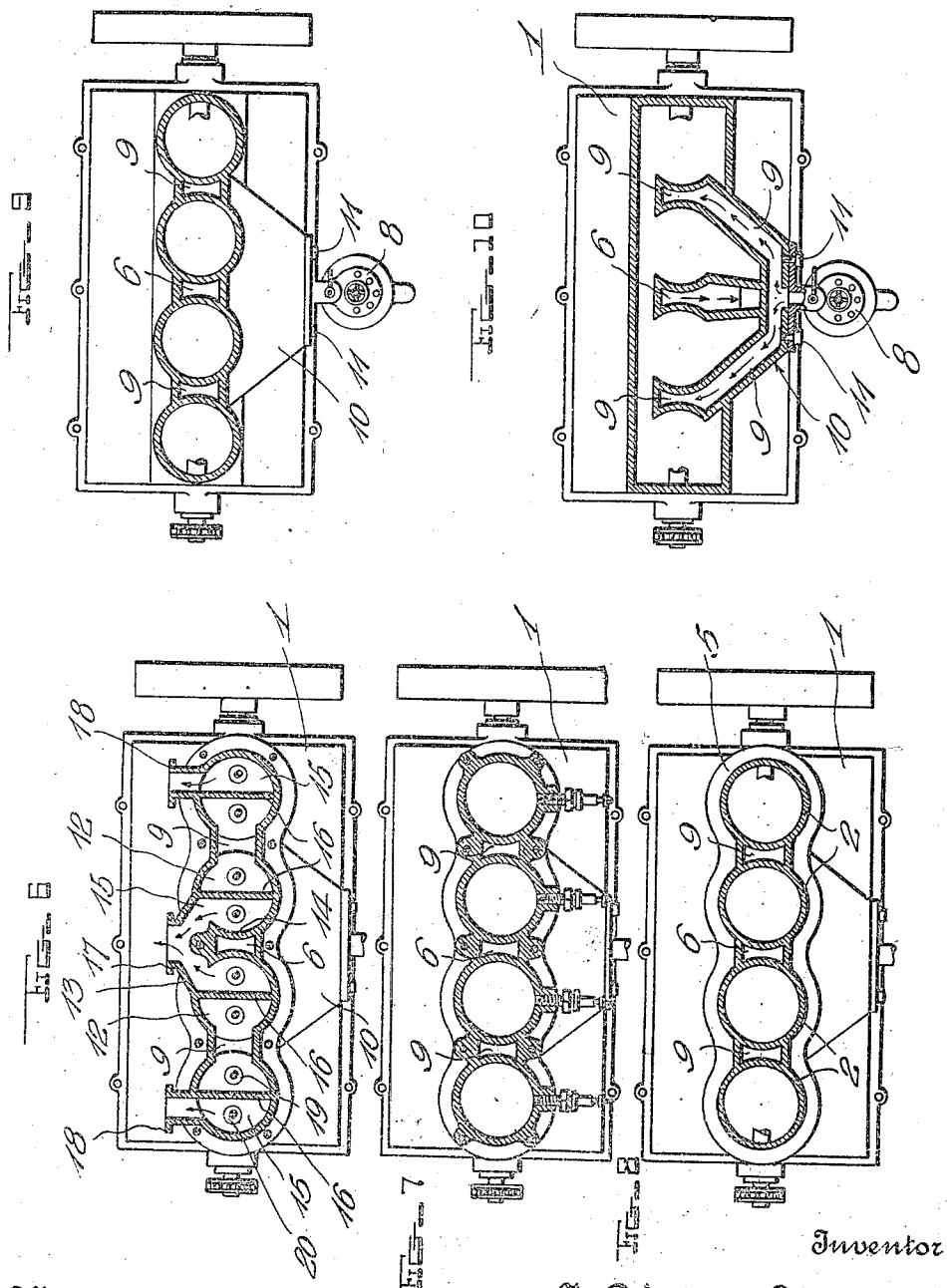
3 SHEETS—SHEET 3.



Witnesses

[illegible]

H. Woodard

Inventor

J. Victor Caron

By H. B. Willson & Co.

Attorneys.

UNITED STATES PATENT OFFICE.

JOSEPH VICTOR CARON, OF HAVERHILL, MASSACHUSETTS.

INTERNAL-COMBUSTION ENGINE.

1,195,441. Specification of Letters Patent. Patented Aug. 22, 1916.

Application filed August 23, 1915. Serial No. 46,907.

To all whom it may concern:

Be it known that I, JOSEPH VICTOR CARON, a citizen of the United States, residing at Haverhill, in the county of Essex and State of Massachusetts, have invented certain new and useful Improvements in Internal-Combustion Engines; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to improvements in internal combustion engines and more particularly to those of the air cooled type, the object of the invention being to provide an improved supplemental cooling means which will, simultaneously with reducing the temperature of the engine, heat the air passing to the carbureter and the mixture flowing therefrom to the cylinders, thereby rendering such mixture highly volatile.

With this general object in view, the invention resides in certain novel features of construction and in unique combinations of parts to be hereinafter fully described and claimed, the descriptive matter being supplemented by the accompanying drawings wherein:

Figures 1 and 2 are side elevations of an engine constructed in accordance with my invention showing opposite sides thereof; Fig. 3 is substantially a central vertical longitudinal section; Figs. 4 and 5 are vertical transverse sections as seen on the planes designated by the lines 4—4 and 5—5 of Fig. 3; Figs. 6, 7 and 8 are horizontal sections on the planes of the lines 6—6, 7—7 and 8—8 of Fig. 3; Fig. 9 is a horizontal section taken on the plane of the line 9—9 of Fig. 4; and, Fig. 10 is a similar view taken on the line 10—10 of Fig. 5.

In these drawings which constitute a part of the application and in which like reference characters designate corresponding parts throughout the several views, the numeral 1 indicates the crank case of the engine whose upper half is formed integrally with the lower ends of a plurality of upright integrally connected cylinders 2 having therein the usual pistons 3 for operating the crank shaft 4. Preferably, though not necessarily, the outer sides of the numerous cylinders are provided with ribs 5 for cooling purposes as is common with air cooled engines.

Disposed between the two innermost cylinders 2, and extending throughout the length thereof, is an upright carbureter air intake port 6 (see more particularly Figs. 3, 5 and 10), the lower end of this port being extended outwardly and downwardly within the crank case and opening through one side of the latter as shown at 7 into the air intake of an appropriate carbureter 8, the mixture outlet of said carbureter being in communication with a pair of carbureter outlet ports 9 which are disposed between the outermost cylinders 2 and the innermost as clearly shown in Fig. 3, the lower ends of the ports 9 being extended laterally and opening through one side of the crank case at points above the open lower end of the port 6.

Preferably, the outwardly extending portion of the port 6, and such portions of the two ports 9, are confined in a single housing 10 which is formed integrally with the crank case and with the lower ends of the cylinders, this construction being not only simple and efficient, but presenting an extremely neat appearance as clearly shown in Fig. 1. As likewise disclosed in this figure, it is to the outer end of the housing 10 that the carbureter 8 is secured, preferably by screws or bolts 11.

The ports 6 and 9 all open at the upper ends of the cylinders 2 as depicted clearly in Fig. 3, at which level, the ports 9 open into compartments 12 in a hollow horizontally disposed cylinder head 13, while the port 6 registers with a port extension 14 in the form of a hollow partition disposed transversely of the head 13 at the center thereof. The compartments 12 into which the volatile mixture is drawn, are separated from additional compartments 15 into which the exhaust gases are expelled, by upright partitions 16 which extend transversely of the head 13 and which are connected not only to the side walls of said head but to the top and bottom thereof. As shown most clearly in Fig. 6, the exhaust ports of the two central cylinders communicate with a large compartment 15 having an outlet 17, while each endmost cylinder discharges its exhaust gases into smaller compartments each having an outlet 18. If desired, the three outlets 17 and 18 may be connected to an appropriate type of exhaust manifold.

The intake and exhaust valves 19 and 20 respectively, are provided with upstanding stems which rise above the top of the cylin-

der head 13 and which are engaged at their upper ends by appropriate rocker arms 21 actuated at proper intervals by a horizontal longitudinally disposed driven cam shaft 22. The shaft 22 is rotatably mounted in bearings carried by the opposite ends of a horizontally elongated housing 23 which is secured in contact with the upper edge of an upstanding flange 24 which is formed integrally with the cylinder head, which rises from said head and surrounds the valve stems, the space within the flange being in communication with the interior of the housing 23 as clearly shown in Fig. 3, since the incoming air must be admitted first into the housing 23. The latter is provided with openings 25 for this purpose. By the provision of the upstanding flange 24 and the fluid-tight casing 23, the space within said flange may be partially filled with lubricating oil, whereby the valve stems will be oiled effectively, and whereby a certain amount of the oil used will be splashed upwardly upon the rocker arms 21 and upon the cam shaft, thereby effectively lubricating these parts and causing them to run practically without noise.

When the engine is in operation, the pistons 3 of the intaking cylinders, in traveling downwardly, will create partial vacuums in the two ports 9, in the carbureter, and in the port 6. In so doing, fresh air will be drawn through the openings 25, the port extension 14, and the port 6, into the carbureter. The air now mixes with the fuel being drawn into the compartments 12 from which it passes into the engine cylinders at proper intervals controlled by the opening of the intake valves. By drawing the air into the carbureter, and the mixture from the latter through the ports adjacent the opposite sides of the cylinders, the latter are noticeably cooled and the explosive mixture is heated, thus rendering the same highly volatile to produce better results when ignited in the engine cylinders.

From the foregoing description, taken in connection with the accompanying drawings, it will be obvious that the construction provided for the attainment of the desired results, is simple and inexpensive, yet will be highly efficient and durable.

In the drawings, certain specific details of construction have been shown for accomplishing probably the best results, and in the preceding such details have been described, but obviously I need not be restricted thereto otherwise than to the extent to which the appended claims limit me.

I claim:

1. The combination with an internal combustion engine including a pair of parallel cylinders, of a carbureter, an air intake port leading between said cylinders to said carbureter and continuing throughout the length of said cylinders, and a pair of outlet ports leading from the carbureter and extending one throughout the length of each cylinder at points remote from the other port.

2. The combination with an internal combustion engine including a pair of parallel cylinders, of a carbureter, an air intake port leading between said cylinders to said carbureter and continuing throughout the length of said cylinders, a pair of outlet ports leading from the carbureter and extending one throughout the length of each cylinder at points spaced from the outer port, all of said ports being open at the outer ends of the cylinders, a hollow cylinder head secured over said outer ends of the cylinders and into which the outlet ports deliver, and a port extension in the head between the aforesaid outlet ports and registering with the intake port.

3. The combination with an internal combustion engine including a pair of parallel cylinders and a crank case at the inner end thereof, of a laterally extending boss formed integrally with said crank case adjacent its connection with the cylinders, a carbureter secured to said boss and having adjacent its lower end a fresh air inlet and at its upper end a mixture outlet, an air intake port leading between two cylinders and through the boss to the air inlet of the carbureter, said port extending throughout the length of said cylinders, and a pair of outlet ports leading from the outlet of the carbureter through the boss and throughout the length of said cylinders at points remote from the intake port.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

JOSEPH VICTOR CARON.

Witnesses:
ROY L. GILES,
BRAD D. HARVEY.