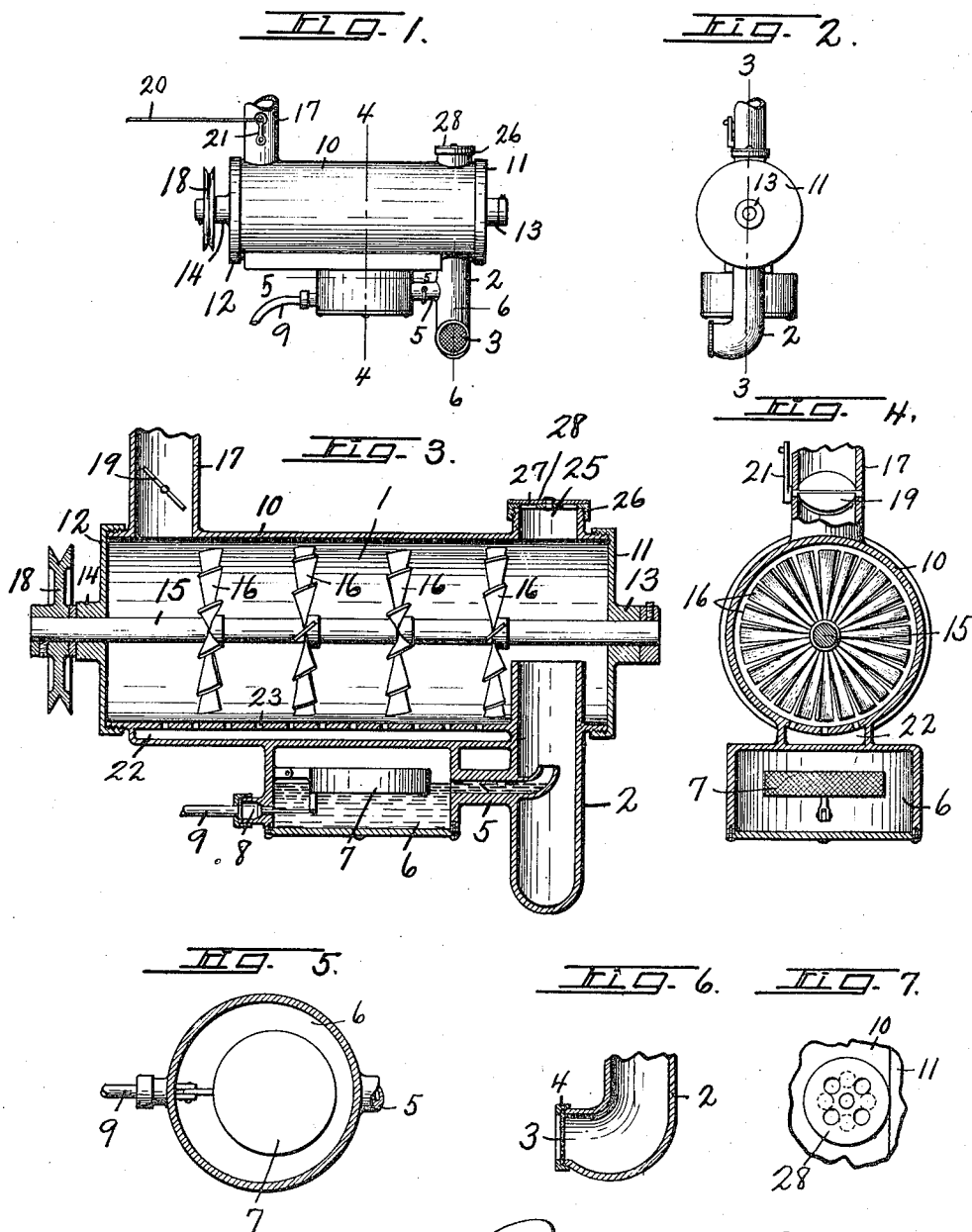


R. O. SYKES.
CARBURETER.
APPLICATION FILED OCT. 1, 1913.

1,174,529.

Patented Mar. 7, 1916.



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ROY ORRIN SYKES, OF SYRACUSE, NEW YORK.

CARBURETER.

1,174,529.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, ROY O. SYKES, of Syracuse, in the county of Onondaga, in the State of New York, have invented new and useful Improvements in Carbureters, of which the following, taken in connection with the accompanying drawings, is a full, clear, and exact description.

This invention relates to certain improvements in carbureters for internal combustion engines and more particularly to a carbureter for use in connection with kerosene as a fuel, although it will operate efficiently with other volatile fluids.

The primary object of my invention is to provide means for positively and continuously drawing in, breaking up and vaporizing a fuel, as kerosene, independently of the action of the piston of the engine.

A further object is to supply the vaporized fuel, under pressure, to the cylinders of the engine, whereby the cylinders are more efficiently cleansed of the spent gases and a more complete combustion takes place.

A further object is to provide a supplementary air inlet having regulating means in connection therewith for admitting to the mixing chamber predetermined amounts of air.

Another object is to provide a chamber below the mixing chamber and communicating therewith at a plurality of points, so that the fuel which remains unvaporized, if there be any, will be fed by gravity from the mixing chamber into the supplementary chamber, from which it is returned to the primary air inlet so that it will be picked up by the air and carried back to the mixing chamber in a vaporized condition.

In the drawings—Figure 1 is a side elevation of the carbureter. Fig. 2 is an end elevation of the same. Fig. 3 is a cross section on line 3—3, Fig. 2. Fig. 4 is a cross section on line 4—4, Fig. 1. Fig. 5 is a cross section on line 5—5, Fig. 1. Fig. 6 is a cross section on line 6—6, Fig. 1. Fig. 7 is a top plan view of the supplementary air inlet, showing the regulator.

The invention comprises a mixing chamber —1—, preferably cylindrical as shown and having near one end a tubular air inlet —2— having one end extending below the mixing chamber and preferably curved in cross section, as shown, and having a screen —3— at its lower end held in proper position by an internally threaded cap —4—.

The upper end of the tubular inlet —2— extends into the mixing chamber and terminates a short distance from the axis thereof. The inlet —2— is also provided with a conduit —5— opening upwardly and leading to a float chamber —6— provided with a float —7— controlling a valve —8— in an inlet pipe —9— leading from any suitable source of supply, not necessary to herein further illustrate or describe.

It is apparent that although I have shown the parts so far described as integral, that they may be made separately and connected in any suitable manner, and that the conduit —5— and the float chamber —6— may be separate from the cylindrical casing forming the chamber —1— and supported in any suitable manner so long as it has a discharge leading to the inlet —2—.

The mixing chamber —1— is preferably formed by an elongated cylindrical body —10— having its ends externally threaded for the reception of caps —11— and —12— having externally threaded portions for co-action with the externally threaded portions of the body —10— and each of these caps is provided with a journal —13— and —14— respectively alined with the axis of the cylindrical body —10— for the reception of a rotary shaft —15— having rigidly mounted thereon a plurality of fans —16— having their blades arranged in staggered relation so that the blades of one substantially cover up openings between the blades of the other so that it is impossible for the fuel to flow therethrough without complete vaporization and the blades are so arranged that they draw the air in through the inlet —2— and the liquid from the conduit —5— of the float chamber so that they are discharged in unison from the inlet —2— into substantially the center of the adjacent end of the mixing chamber —1— and are then carried forward by the fans, positively commingled and mixed thereby and compressed in the outlet —17— and the end of the chamber adjacent thereto so that when the inlet valve of the engine opens, the fuel rushes in and supplements the action of the piston in discharging the spent gases.

The shaft —15— and the fans carried thereby are positively rotated from any suitable driving source through the medium of a pulley —18— mounted on the shaft. It is apparent, however, that a gear may be used instead of the pulley —18— and like-

wise driven from any suitable source and through any connections desirable.

The outlet —17— is provided with a throttle valve —19— which may be operated 5 in any suitable manner and from any desired position through the medium of an arm —20— and a lever —21— not necessary to herein further illustrate or describe.

The lower side of the cylindrical body 10 —10— is provided with a supplementary chamber —22— communicating with the mixing chamber—1— through preferably a plurality of openings —23— in the wall of the body —10— so that any fuel drawn 15 in as the engine is stopping will condense and be collected in the chamber —22— and not directly in the mixing chamber, and when the engine is started the condensed fuel will not be thrown immediately into 20 the cylinders of the engine, but must be drawn through the opening —23— and completely broken up and vaporized before entering the cylinders. The body —10— is also provided with a supplementary air inlet 25 —25— at the same end of the chamber as the inlet —2— closed by a cap —26— having openings —27— therein and a sliding plate —28— pivoted to the cap —26— and likewise having openings therein adapted 30 to be brought into or turned out of registration with the openings in the cap —26—, either fully or partially in order to regulate or entirely shut off the flow of air from this inlet.

35 In operation, the positively rotated fans —16— draw the air and liquid fuel through the inlet —2—, drive it across the mixing chamber —1— and compress it in the outlet —17— and the adjacent end of the mixing 40 chamber so that there is always a positively mixed compressed charge awaiting the opening of each valve of the respective cylinders of the engine, independently of any

action of the piston and the percentages or richness of the mixture may be governed by 45 means of the supplementary air inlet —25— and the regulating means in connection therewith.

Although I have shown a collecting chamber —22— communicating with the mixing 50 chamber for the purpose specified, it is apparent that the device will operate efficiently if said chamber is omitted, and whatever fuel is in the mixing chamber when the engine stops is allowed to condense in said 55 chamber and that many changes may be made in the details of construction and operation of the device without departing from the spirit of this invention as set forth in the appended claims. 60

What I claim is:

1. A carbureter having a mixing chamber provided with a fuel inlet and a fuel outlet, a positively driven fan in said chamber, and a collecting chamber below the mixing 65 chamber and adapted to receive and retain the combustible fluid remaining in the mixing chamber when the fan ceases to move, in such a manner that when the fan starts this combustible fluid is drawn from the col- 70 lecting chamber, vaporized and forced into the combustion chamber.

2. A carbureter having a mixing chamber provided with a fuel inlet and a fuel outlet, a positively driven rotary fan in said cham- 75 ber, a chamber disposed below said mixing chamber, means of communication between said chambers whereby condensation in the mixing chamber is fed by gravity into the communicating chamber. 80

In witness whereof I have hereunto set my hand this 22nd day of September, 1913.

ROY ORRIN SYKES.

Witnesses:

E. A. THOMPSON,
VIOLA HOWLAND.