J. A. PATERSON.

CARBURETER.

APPLICATION FILED MAY 19, 1909.

1,011,641.

Patented Dec. 12, 1911.

2 SHEETS—SHEET 1.

FIG. 1

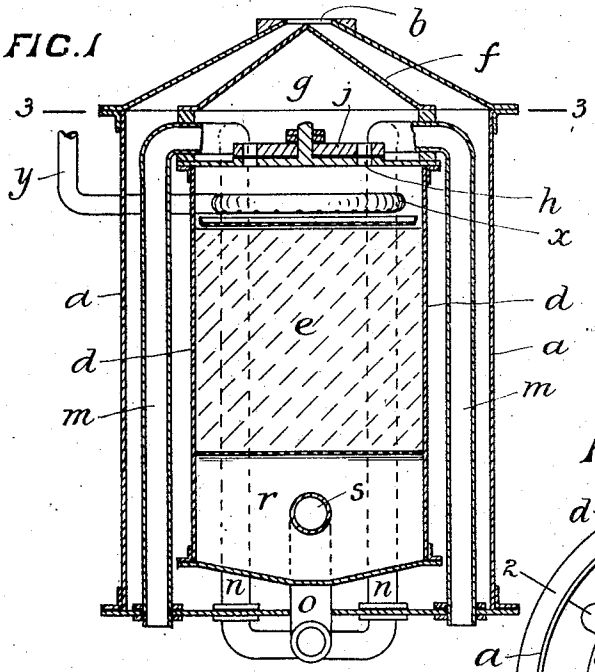


FIG. 3

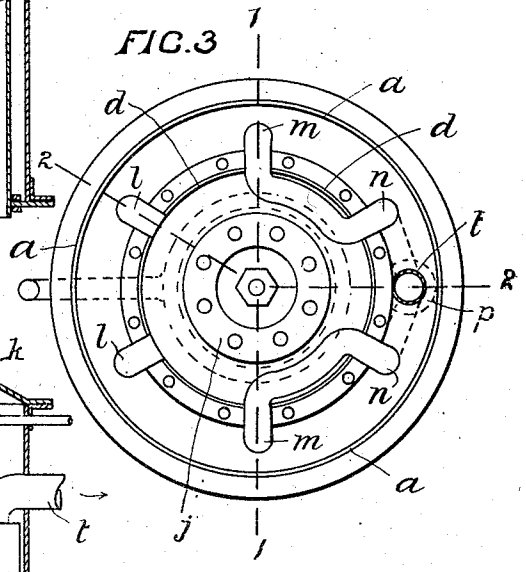
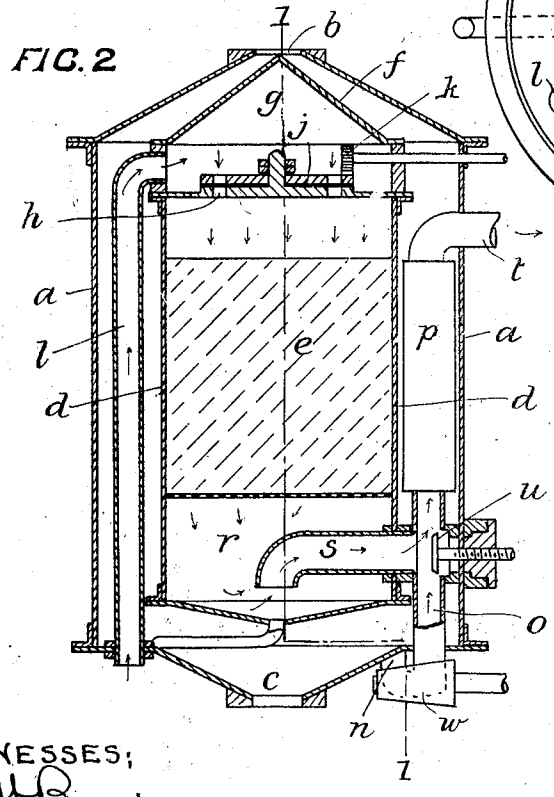


FIG. 2



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2 SHEETS—SHEET 2.

FIG 4

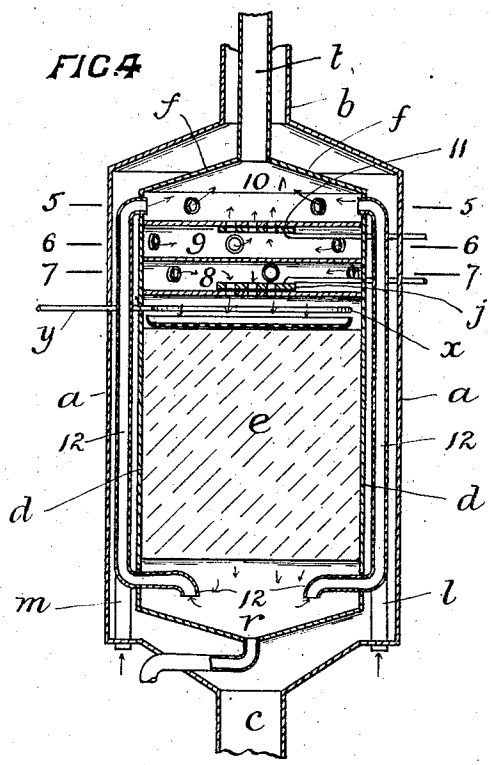


FIG. 5

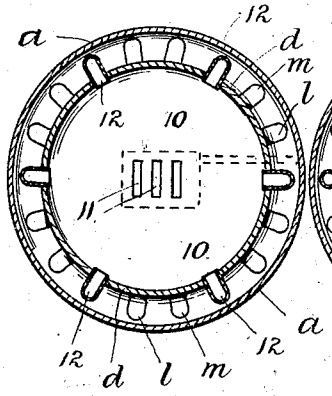


FIG. 6

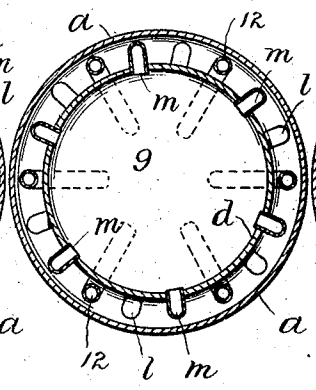
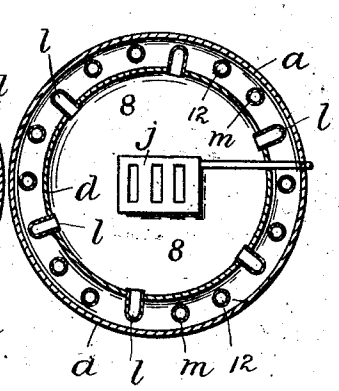


FIG. 7



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CARBURETER.

1,011,641. Specification of Letters Patent. Patented Dec. 12, 1911.

Application filed May 19, 1909. Serial No. 497,075.

To all whom it may concern:

Be it known that I, JOHN ANDERSON PATERSON, a subject of the King of Great Britain, residing at Wellington, in the Dominion of New Zealand, have invented a new and useful Carbureter; and I do hereby declare the following to be a full, clear, and exact description of the same.

This invention has been designed specially in order to provide for the satisfactory production of gas from hydro-carbon oils for use for power purposes such as the driving of motor car, launch, and other gas and oil engines.

In order to effect this purpose, the invention consists in the provision of means whereby the exhaust from the engine will be employed to warm the carbureter, the air admitted to such carbureter for the production of the gas, and the air utilized for the attenuation of the rich gas in order to reduce it to the proper explosive mixture.

In carrying out the invention, the exhaust is caused to pass through a chamber in which the carbureter is placed and through which pipes for conveying the air to the carbureter and the air for admixture with the gas, are arranged. In the chamber also may be placed the mixer in which the gas and attenuating air are mixed together, so that the whole operation of producing and attenuating the gas for supplying the engine may be carried out in a chamber warmed by the heat from the exhaust passing through it.

In describing the invention, reference will be made to the accompanying sheets of drawings in which two alternative forms of apparatus are shown, and in which,—

Figure 1 is a sectional elevation of one form of the appliances employed, taken on the line 1—1 of Figs. 2 and 3. Fig. 2 is a similar section taken on the line 2—2 of Fig. 3. Fig. 3 is a sectional plan taken on the line 3—3 of Fig. 1. Fig. 4 is a sectional elevation of the second or alternative manner of carrying out the invention. Figs. 5, 6 and 7 are sectional plans taken on the lines 5—5, 6—6 and 7—7 respectively of Fig. 4.

Referring first to Figs. 1 to 3,—*a* is a chamber of approved size and shape in cross section, into the top end of which the exhaust is led through the opening *b* and from the bottom of which it passes through the opening *c*. This chamber may be of any approved shape. In the drawings it is shown as cylindrical. Within the chamber is placed the carbureter *d* which may be of any approved type, but preferably of the dry or surface type in which the air to be carbureted is caused to pass down through an absorbent material *e* kept saturated with the oil employed. This carbureter is so arranged within the exhaust chamber *a* as to leave a space all around it and it is provided with a cone shaped top *f*, inclosing an air chamber *g*, and the apex of which is placed immediately below the exhaust inlet *b*. This cone surface will thereby serve to break up the entering exhaust gases, and guide them equally around the whole external surface of the carbureter. The air chamber *g* is in communication with the carbureter proper through apertures *h* the openings of which are regulated and governed by the revolving plate *j* having corresponding apertures adapted to coincide with or to be cut off from the apertures *h*. This plate is operated by tooth and pinion gearing *k* (Fig. 2) extending to without the exhaust chamber *a*. The oil for saturating the absorbent *e* is delivered on to it through the perforating ring *x* connected with a supply pipe *y* as shown in full lines in Fig. 1, and in dotted lines in Fig. 3.

The air for admission to the air chamber *g* is led up through the pipes *l l*, Figs. 2 and 3, which pass from the bottom of the exhaust chamber *a*, up through the space between such chamber and the carbureter, and into the air chamber *g*. The air for admixture with the gas produced in the carbureter is led through the pipes *m*, *m*, extending from the bottom of the chamber *a*, up through the space around the carbureter. These pipes, at their upper ends, are then respectively connected to similarly situated downwardly extending pipes *n*, *n*, which, at their lower ends, turn inward and connect with a single pipe *o* leading upward to the mixer *p*. Thus, the air will pass up through the pipes *m*, and then down the pipes *n*, and up again through the pipe *o* to the mixer *p*. This course of the attenuating air is clearly shown in the drawings. The gas generated in the carbureter will be led from the gas chamber *r* below the absorbent by means of the pipe *s* into the pipe *o*, and by it be conveyed with the attenuating air into the mixer *p* which, in this form of appliance, is also placed within the space surrounding the carbureter. From the mixer, the gas is led away to the engine through

the outlet *t*. The passage of the gas from the pipe *s* will be controlled by means of a disk valve *u* Fig. 2, or the like, operated from without the chamber. The amount of attenuating air passing to the mixer will also be controlled by means of a stop cock or valve *w*, Fig. 2, governing the passage through the pipe *o*.

The air pipes *l*, *m*, and *n*, are arranged at regular intervals apart within the space surrounding the carbureter, and each one at its lower end is firmly attached to the bottom of the exhaust chamber *a*, while its upper end is firmly attached to the carbureter. These pipes thus serve as stays to hold the carbureter firmly in its proper position within the exhaust chamber. Any desired number of pipes thus arranged, may be employed according to the various requirements of the case.

It will be seen that as the exhaust gases pass through the chamber *a*, they will serve to warm the carbureter, the air pipes arranged in their passage, and the mixer *p* so that the whole operations of generating the gas, and of attenuating it for use, will be carried out with warmed air, and under the influence of the heat of such exhaust gases. The volatilizing of the lower grade oils may thus be efficiently carried out while the gas will be produced in a warm state for use in the engine, thereby giving a better explosive effect.

In the alternative form of appliance shown in Figs. 4 to 7, the carbureter *d* is provided with a number of separate compartments in its top end for receiving respectively the air to be carbureted, the air for admixture with the generated rich gas and the gas itself. These compartments are numbered respectively 8, 9, and 10. The pipes *l* for conveying the air to be carbureted, pass up through the bottom of the exhaust chamber *a* and into the compartment 8 and from thence the air passes through the inlet valve *j* into the carbureting chamber *e*. The air for mixing with the gas passes up through the bottom of the chamber *a*, through the pipes *m*, and into the compartment 9, and may then be allowed to pass in governed quantities, through the inlet valve 11, into the compartment 10 above. The gas collected in the bottom of the carbureter will pass up through the pipes 12 into the compartment 10 and from thence will be drawn away through the outlet *t*, with the attenuating air, to a mixer outside the appliance, or direct to the engine, if so required. It will be noted that each series of pipes *l*, *m* and 12 pass within the space between the carbureter *d* and the exhaust chamber *a* so that the air and the gas passing up through such pipes will be heated by the exhaust gases passing through the space. The valves *j* and 11 being under control, the amount of air admitted to the carbureting chamber, and to the compartment 10 for attenuating the gas, may be regulated to any desired amount. It will be readily understood that only a portion of the exhaust may be caused to pass through the chamber *a* if so desired, and the heat generated in such chamber may be regulated by controlling the proportion of the exhaust passing through it.

What I do claim as my invention, and desire to secure by Letters Patent, is,—

1. In a carbureter for internal combustion engines, the combination with a chamber through which the exhaust from the engine is passed, of a carbureting member located within such chamber, means for conducting air to the carbureter, and means for conducting air for attenuating the generated mixture of vapor and air, both said air conducting means being adapted to be heated by the gases in said exhaust chamber.

2. In a carbureter, in combination, a chamber arranged within the passage of the exhaust from a gas or oil engine, a carbureter placed within such chamber, an air chamber above the carbureter, openings between such air chamber and the carbureter, air pipes passing through the exhaust chamber and entering the air chamber, a mixing compartment within the exhaust chamber, connections between such compartment and the carbureter, and air pipes passing through the exhaust chamber to the mixing compartment, substantially as specified.

3. In a carbureter in combination, a chamber arranged within the passage of the exhaust from a gas or oil engine, a carbureter placed within such chamber, and arranged to leave a space all around it, a mixing compartment placed within the chamber and connected with the carbureter, pipes extending upward from the bottom of the chamber, and through the space surrounding the carbureter fastened at their lower ends to the chamber, and at their upper ends to the carbureter, such pipes serving to convey air to the carbureter and to the mixing compartment, substantially as specified.

In testimony whereof, I have signed this specification in the presence of two subscribing witnesses.

JOHN ANDERSON PATERSON.

Witnesses:

W. ALEXANDER,

M. E. BROWN.