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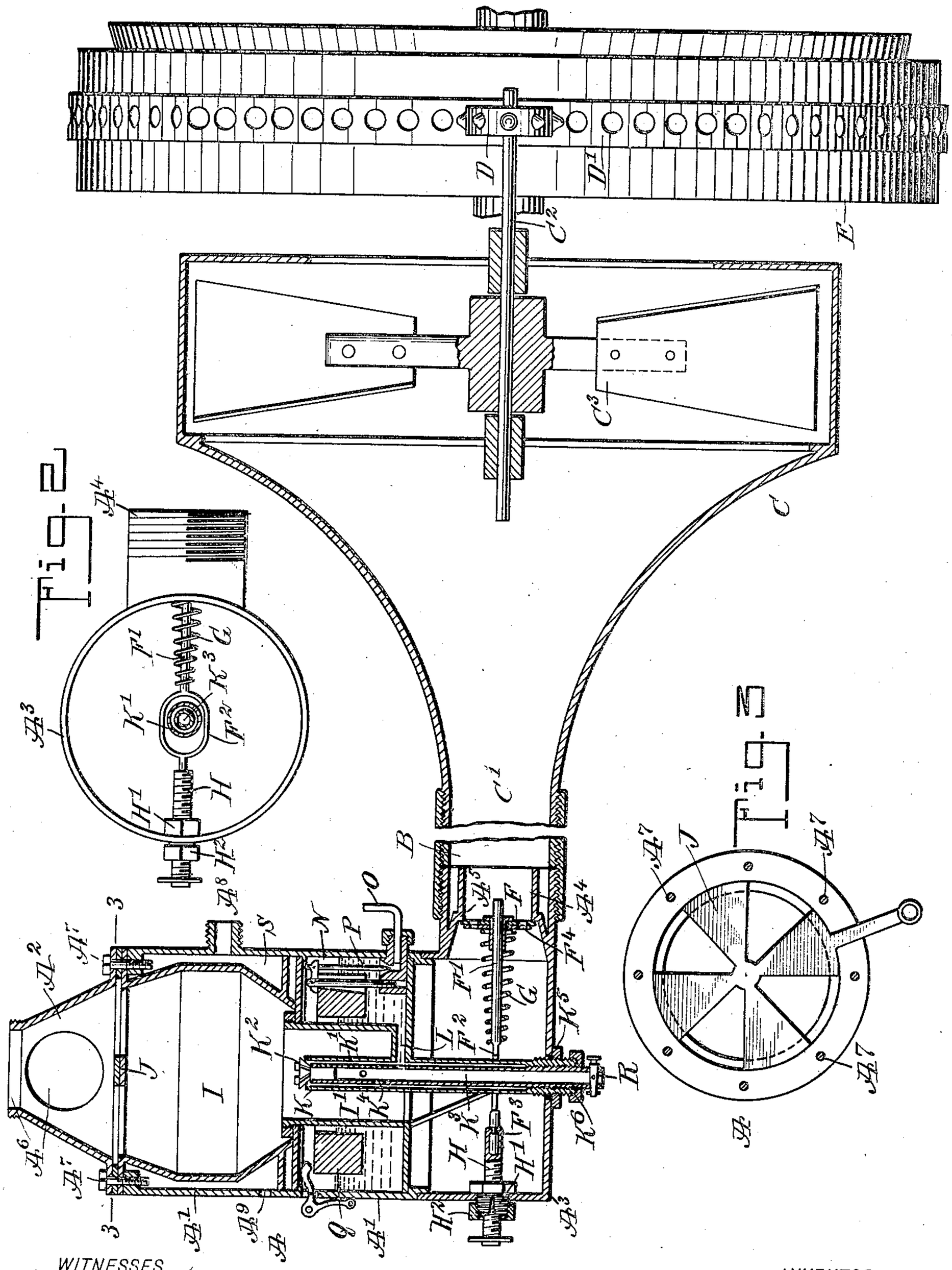
E. GUNDELACH.

CARBURETER.

APPLICATION FILED JUNE 18, 1906.

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## CARBURETER.

No. 876,800. Specification of Letters Patent. Patented Jan. 14, 1908.

Application filed June 18, 1906. Serial No. 322,285.

*To all whom it may concern:*

Be it known that I, EMIL GUNDELACH, a citizen of the United States, and a resident of the city of New York, borough of Manhattan, in the county and State of New York, have invented a new and Improved Carbureter, of which the following is a full, clear, and exact description.

The invention relates to explosion motors or engines for automobiles and the like, and its object is to provide a new and improved carbureter which is simple and durable in construction, and arranged to insure an intimate mixture of the air and gas, to force the explosive mixture thus formed into the working chamber of the motor under pressure, with a view to forcibly drive out the residual matter left by a previous explosion, and to fill the working chamber with an efficient fuel charge even when running the motor at a high rate of speed.

The invention consists of novel features and parts and combinations of the same, which will be more fully described hereinafter and then pointed out in the claims.

A practical embodiment of the invention is represented in the accompanying drawings forming a part of this specification, in which

Figure 1 is a sectional side elevation of the improvement; Fig. 2 is a plan view of the lower section of the casing, parts being shown in section; and Fig. 3 is a plan view of the throttle valve, on the line 3—3 of Fig. 1.

The casing or shell A of the carbureter consists preferably of a central section A′, a top or outlet section $A^2$ connected with the working chamber of the motor or engine, and a bottom section $A^3$ provided with an inlet $A^4$ coupled by a pipe B to the discharge end C′ of a fan or blower C of any approved construction. The shaft $C^2$ of the wheel $C^3$ of the fan or blower C, is provided with a pinion D in mesh with an apertured band D′ secured on the fly wheel E of the motor or engine, so that when the latter is in operation a rotary motion is transmitted to the wheel $C^3$ of the fan or blower C, to force air through the outlet C′ and the inlet $A^4$ into the bottom section $A^3$ of the shell or casing A.

I have illustrated and described a simple means for running the wheel $C^3$ of the fan or blower C, but it is evident that I do not limit myself to the particular construction shown and described, as other suitable means may be employed for driving the wheel $C^3$ from the motor or engine. Other suitable means may also be employed for delivering a blast of air to the bottom section $A^3$ of the casing A, it being understood however, that such means are located outside of the casing A and are independent thereof.

The inlet $A^4$ is provided with a valve seat $A^5$ engaged by a valve F mounted to slide loosely on a valve stem F′ and pressed to its seat by a spring G coiled on the said valve stem F′ and resting at one end on the valve F and at the other end on a loop or shoulder $F^2$ formed on the valve stem F′. The valve stem F′ extends in the bottom section $A^3$ and is provided near its outer end with an annular groove $F^3$ engaged loosely by a shifting screw H screwing in a split nut H′ attached to the bottom section $A^3$ and extending to the outside thereof. On the outer tapering and externally threaded end of the nut H′ screws a correspondingly shaped nut $H^2$, for securely clamping the shifting screw H in place. Now when the nut $H^2$ is loosened the screw H can be screwed inward or outward from the outside of the casing A, to shift the stem F′ in the direction of its length, thus increasing or decreasing the tension of the spring G to hold the valve F with more or less force against its seat $A^5$ and against the air blast from the fan or blower C. After the tension of the spring G is regulated, the nut $H^2$ is screwed up to securely clamp the screw H in place. The valve F is provided with one or more apertures $F^4$, to allow some of the air blast to pass through the valve F into the casing A even if the valve F is in a seated or closed position, it being, however, understood that the valve F opens as soon as the pressure of the air blast overcomes the tension of the spring G.

The bottom section $A^3$ connects with the inlet I′ of a mixing chamber I contained in the central section A′ and connected with the outlet section $A^2$ by a valve J, under the control of the operator, for throttling the supply of the explosive charge to the working chamber of the motor or engine. A spraying device K is arranged within the inlet I′, and this spraying device is provided with a pipe K′ connected by a branch pipe L with the bottom of the reservoir N for containing gasolene or a like liquid fuel, the reservoir being arranged in the lower portion of the

central section A′ of the shell or casing A. A supply pipe O connected with a suitable gasolene or like liquid fuel supply discharges into the reservoir N, and the discharge end of this pipe O is controlled by a valve P actuated from a float Q rising and falling with the liquid fuel contained in the reservoir N, so that a constant supply of gasolene is had, and the level of the gasolene is maintained in the reservoir N at a height somewhat below the upper end of the pipe K′.

By reference to the drawings it will be noticed that the reservoir N surrounds the inlet I′ containing the spraying device K. The nozzle $K^2$ of the spraying device K is held on the upper end of a tube $K^3$ contained within the pipe K′ and held lengthwise adjustable therein, to bring the nozzle $K^2$ closer to or farther from the upper outlet end of the pipe K′ to control the spraying of the liquid fuel. The tube $K^3$ is provided with openings $K^4$ opening into the pipe K′, so as to allow sediment, water or the like contained in the gasolene to pass into the tube $K^3$ to be discharged from the lower end thereof from time to time on opening a suitable valve R. The pipe K′ is secured to and forms part of the middle section A′ and its lower end forms a bearing for the lower section $A^3$ of the casing A to turn on, with a view to bring the inlet $A^4$ into proper alinement with the outlet C′ of the blower or fan C. When the desired adjustment is made a nut $K^5$ is screwed up on the lower threaded end of the pipe K′ and against the underside of the bottom of the section $A^3$, to secure the sections $A^3$ and A′ in place. A nut $K^6$ serves to lock the tube $K^3$ in place in the pipe K after the nozzle $K^2$ is properly adjusted. The pipe K′ extends through the loop $F^2$ of the valve stem F to hold the latter against turning. The top section $A^2$ is provided with one or more outlets $A^6$ and is held rotatable on the middle section A′, to allow of bringing the outlets in proper alinement with the working chamber of the engine. The sections A′ and $A^2$ are secured together after the proper adjustment is made, by bolts $A^7$ as plainly indicated in Figs. 1 and 3.

In order to heat the mixing chamber I, the exhaust is conducted into the space S surrounding the mixing chamber I in the upper portion of the central section A′, the latter being provided with a nipple $A^8$ for connection with the exhaust of the motor or engine. An outlet opening $A^9$ in the central section A′ permits the escape of some of the exhaust passing into the space S.

The operation is as follows: When the motor or engine is running a rotary motion is given to the wheel $C^3$, for the latter to force air under pressure through the inlet $A^4$ into the bottom section $A^3$, from which the air blast passes up through the inlet I′ to spray the liquid fuel at the nozzle $K^2$ of the spraying device K. The air under pressure and the sprayed gasolene are now intimately mixed in the mixing chamber I, and the resultant mixture passes under pressure through the outlet section $A^2$ into the working chamber of the motor or engine, so as to drive out any residual matter left by a previous explosion in the said working chamber, and at the same time the working chamber is completely filled with an explosive charge no matter at what rate of speed the engine or motor is running. It is understood that according to the speed of the motor or engine the pressure of the air blast increases or decreases correspondingly, and, consequently, when the motor or engine is running at a high rate of speed the pressure increases and, consequently, the explosive mixture is forced in a fraction of a second under high pressure into the working chamber, to completely fill the same as above described. Thus the highest efficiency of the motor or engine is maintained at all times.

From the foregoing it will be seen that suction action of the motor or engine is not depended upon to fill the working chamber with an explosive charge, but the latter is forced under pressure into the working chamber as soon as the piston is on the suction stroke.

The gasolene issues into the mixing chamber, which is connected directly with the reservoir. The tube $K^3$ is completely closed at its top and is adjustable in the tube K′, to move the nozzle $K^2$ toward or from the open end of the tube K′ to control the amount of liquid issuing from the tube K′. The lower end of the tube $K^3$ is open, and openings $K^4$ provide a communication between the said tube and the tube K′ so that sediment or water from the gasolene may pass into the tube $K^3$ and be discharged therefrom on opening the valve R.

Having thus described my invention, I claim as new and desire to secure by Letters Patent:

1. A carbureter comprising a casing composed of a central, a top and a bottom section, said top section being rotatable upon the central section and provided with outlets for communicating with the working chamber of the engine, said central section being provided with a mixing chamber whose walls are spaced apart from the wall of the section, and with an oil reservoir provided with a supply pipe below the mixing chamber, and a central inlet from the bottom section to the mixing chamber, a spraying device within the inlet, said device comprising a pipe extending through the bottom section and communicating with the reservoir, the outer end of said pipe being screw threaded, a nut engaging said end for retaining the bottom section in place, and a tube within the pipe and provided with a nozzle, said nozzle co-acting with the open end of the pipe to form a con-

tracted opening through which the liquid is sprayed, said tube having openings in the sides thereof and provided with a valve at its outer end, a float valve controlling the supply pipe of the reservoir, said bottom section being provided with an air inlet, a valve controlling the inlet, said valve having a stem projecting through the opposite side of the bottom section from the air inlet, a spring normally seating the valve, means for regulating the tension of the spring, and a fan for forcing air through the inlet.

2. A carbureter, comprising a casing composed of a central, a top, and a bottom section, said top section being adjustable with respect to the central section, and provided with outlets for communicating with the working chamber of the engine, the central section being provided with a mixing chamber whose walls are spaced apart from the walls of the section, and with an oil reservoir provided with a supply pipe below the mixing chamber, and a central inlet from the bottom section to the mixing chamber, a spraying device within the inlet and communicating with the oil reservoir, a float valve controlling the supply pipe of the reservoir, said bottom section being rotatable on the central section, and provided with an air inlet, a valve controlling the inlet, said valve having a stem projecting through the opposite side of the bottom section from the air inlet, a spring normally closing the valve, means for regulating the tension of the spring, and a fan for forcing air through the inlet.

3. A carbureter, comprising a casing composed of a central, a top, and a bottom section, said top section being adjustable on the central section and provided with outlets for communicating with the working chamber of the engine, said central section being provided with a mixing chamber whose walls are spaced apart from the walls of the section, and with an oil reservoir provided with a supply pipe below the mixing chamber, and a central inlet from the bottom section to the mixing chamber, a spraying device within the inlet, said spraying device having communication with the oil reservoir, said bottom section being rotatable with respect to the central section and provided with an air inlet, a valve controlling the inlet, said valve having a stem projecting through the opposite side of the bottom section from the casing, a spring normally seating the valve, means for regulating the tension of the spring, and a fan for forcing air through the inlet.

4. A carbureter, comprising a casing composed of a central, a top, and a bottom section, said top section being adjustable with respect to the central section, and provided with outlets for communicating with the working chamber of the engine, said central section being provided with a mixing chamber whose walls are spaced apart from the walls of the section to provide a space for a heating medium, and with an oil reservoir below the mixing chamber, and a central inlet from the bottom section to the mixing chamber, a spraying device within the inlet, said device communicating with the oil reservoir, said bottom section being rotatable with respect to the central section, and provided with an air inlet, a spring-pressed valve controlling the inlet, means outside of the casing for adjusting the tension of the spring, and a fan for forcing air through the inlet.

5. A carbureter, comprising a casing, composed of a central, a top, and a bottom section, said top section being rotatable and provided with outlets for communicating with the working chamber of the engine, said central section being provided with a mixing chamber and with a central inlet leading from the bottom section to the mixing chamber, an oil reservoir encircling the inlet, a spraying device within the inlet, said bottom section being provided with an air inlet, a valve controlling the inlet, and a fan for forcing air through the inlet.

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

EMIL GUNDELACH.

Witnesses:
THEO. G. HOSTER,
JNO. M. RITTER.