M. C. BRIGHT.

FLOATLESS CARBURETER.

APPLICATION FILED JULY 23, 1908.

956,882.

Patented May 3, 1910.

2 SHEETS—SHEET 1.

Fig. 1.

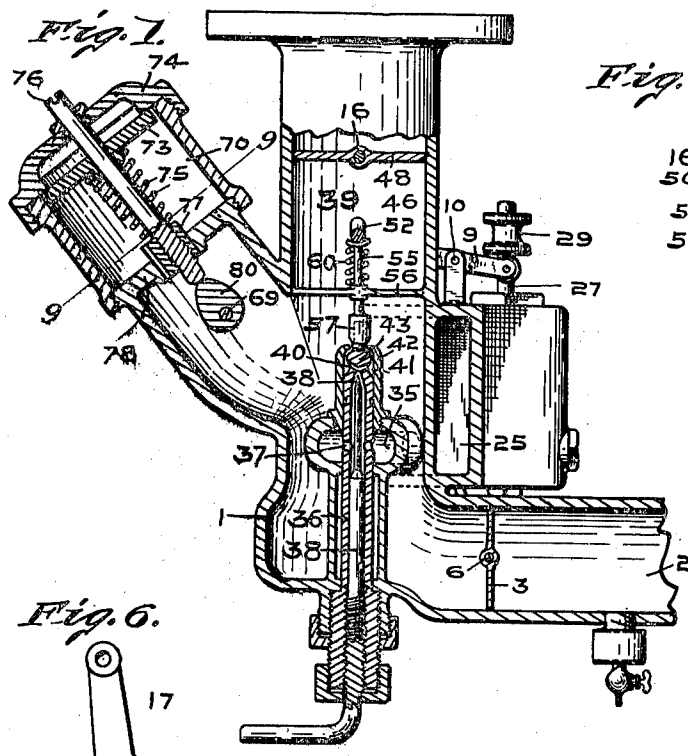


Fig. 2.

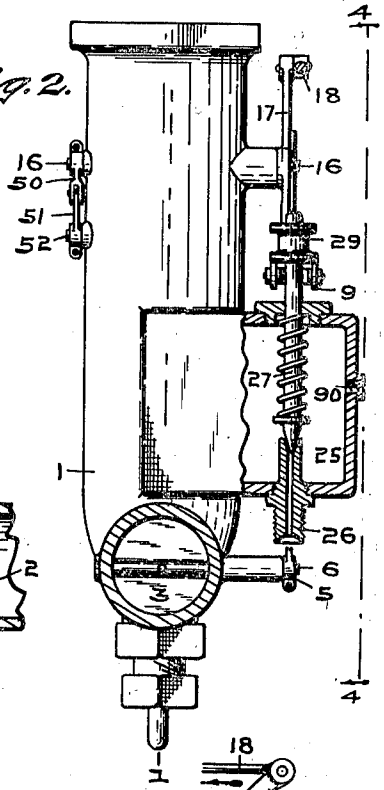


Fig. 6.

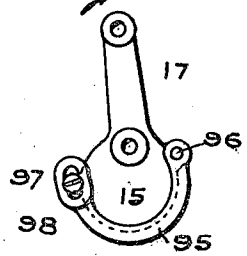


Fig. 4.

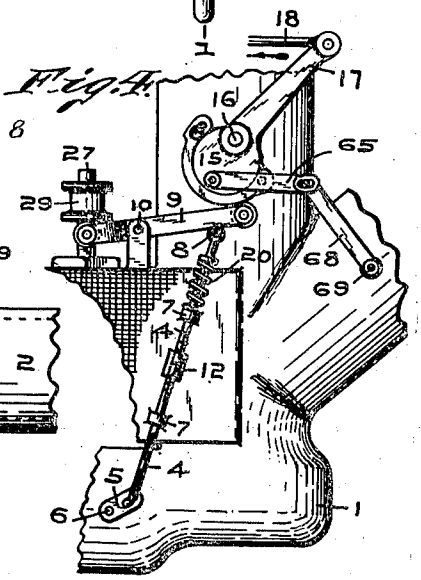


Fig. 3.

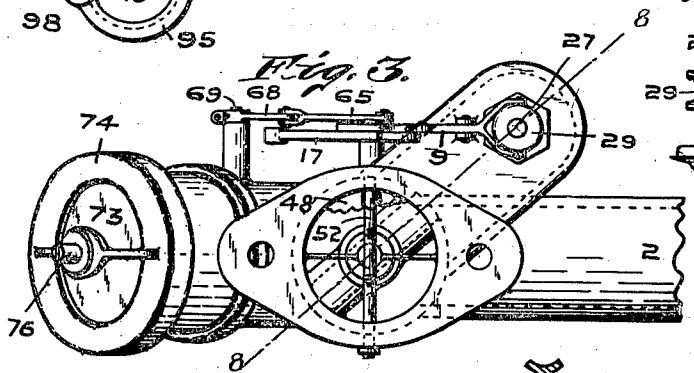


Fig. 7

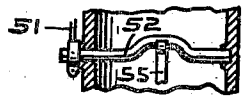
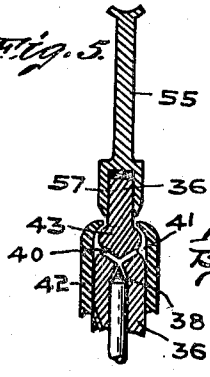


Fig. 5.



WITNESSES:

L. B. Moerner.

Wm. Hurte.

INVENTOR

Martin C. Bright,

By Minturn & Moerner

ATT'YS.

M. C. BRIGHT.

FLOATLESS CARBURETER.

APPLICATION FILED JULY 23, 1908.

956,882.

Patented May 3, 1910.

2 SHEETS—SHEET 2.

Fig. 8.

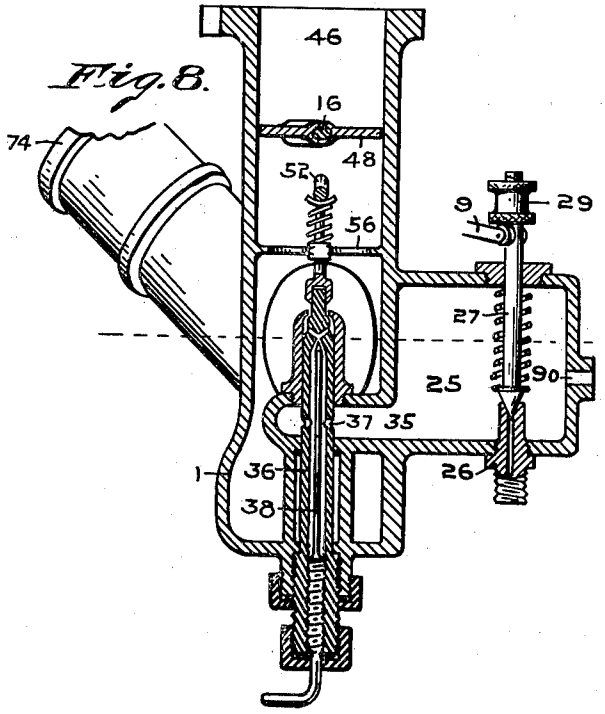
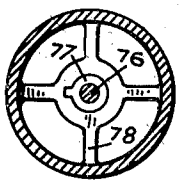


Fig. 9.



WITNESSES:

L. B. Moomau.

Wm Hurte.

INVENTOR

Martin C. Bright,

By Minturn & Moomau

ATT'YS.

UNITED STATES PATENT OFFICE.

MARTIN C. BRIGHT, OF INDIANAPOLIS, INDIANA, ASSIGNOR OF ONE-HALF TO CHARLES W. MEIKEL, OF INDIANAPOLIS, INDIANA.

FLOATLESS CARBURETER.

956,882. Specification of Letters Patent. Patented May 3, 1910.

Application filed July 23, 1908. Serial No. 444,955.

To all whom it may concern:

Be it known that I, MARTIN C. BRIGHT, a citizen of the United States, residing at Indianapolis, in the county of Marion and State of Indiana, have invented certain new and useful Improvements in Floatless Carbureters, of which the following is a specification.

This invention relates to floatless carbureters for explosive engines; and the object of the invention is to provide a carbureter of the above character wherein the volume of vapor and air is at all times under positive control of the operator.

A further object of the invention is to provide means by which the oil level within the nozzle can be maintained.

A further object of the invention is to provide a carbureter wherein as the throttle is actuated to increase or decrease the supply of vapor, a corresponding increase or decrease in the supply of air is effected, in a positive manner.

I accomplish the objects of my invention by means of a carbureter illustrated in the accompanying drawings, forming a part hereof, in which—

Figure 1, is a central vertical sectional view of the carbureter. Fig. 2 is an end elevation of the construction shown in Fig. 1, except a portion of the auxiliary reservoir being shown in section. Fig. 3 is a top or plan view of the construction shown in Fig. 1. Fig. 4 is a fragmentary detail view in elevation of the carbureter as seen from the line 4—4 in Fig. 2. Fig. 5 is a central vertical sectional view, on an enlarged scale, of the upper end of the spraying valve. Fig. 6 is a side elevation of the cam lever for operating the several parts of the carbureter. Fig. 7 is a side elevation of the cam-shaft. Fig. 8 is a cross section of the carbureter on the line 8—8 in Fig. 3. Fig. 9 is a cross section on the line 9—9 in Fig. 1.

In the drawings, 1 constitutes the casting which forms the body of the carbureter, said body being provided with a primary air intake 2. This intake is provided with a throttle valve 3 by which the intake of air may be regulated. The primary intake 2 supplies the air when the engine is started, or running at low speed, and the valve 3 is under control of the actuating-rod 4 mounted exteriorly of the body 1 of the carbureter as shown in Fig. 4 of the drawings. The actuating-rod 4 engages a slotted crank 5 which is secured to the valve shaft 6, carrying the throttle valve 3. It will be noted that the actuating-rod 4 moves in a determined plane through a pair of lugs 7, formed on the side of the carbureter body, and the lever 5 is slotted to permit said lever to move through its proper arc. The upper end of the actuating-rod 4 is provided with an antifriction roller 8 which bears against the lower surface of the rocker arm 9. The actuating-rod 4 is formed in two parts and the adjacent members are provided with right and left hand threads to receive a turn buckle 12, whereby the length of the actuating- rod may be increased or decreased to prevent unnecessary play between the rocker arm 9 and the valve shaft 6. The rocker arm 9 is actuated by means of the cam 15, mounted on the shaft 16, and said cam is provided with an integrally formed lever 17. The throttle lever 18, which extends to the operator's seat, is attached to the free end of the lever 17, so that when said throttle lever 18 is moved in the direction indicated by the arrow in Fig. 4, the rocker arm 9 will be depressed as will the actuating-rod 4, thereby causing the throttle valve 3 to be moved into an inclined position, to provide an opening for the passage of air through the primary air intake 2. When the throttle lever 18 is returned to normal position, the rocker arm 9 and the actuating-rod 4 with its depending mechanism is elevated, or returned to their normal positions, by means of a spring 20. With the actuation of the throttle lever 18 which, as heretofore mentioned, actuates the valve 3 for the admission of air to the carbureter, the valve 27 for admitting the gasolene is also actuated.

The carbureter is provided with an auxiliary reservoir 25 into which the oil is fed through a coupling 26 from the main oil tank (not shown) which is located at a convenient point within the frame-work (not shown) around the engine, by means of any of the usual and well known pumps. A needle valve 27 engages the upper end of the coupling 26 and the upper end of the valve-stem 27 is provided with threads to receive a thumb nut 29. The valve-stem is actuated by the engagement of the rocker arm 9 underneath the thumb nut 29 and the

throw of the needle valve 27 may be varied by moving the thumb nut 29 up or down on the valve-stem, which will increase or decrease the throw of said valve. It may here be mentioned that when the valve-stem 27 is raised the oil is prevented from flowing back through the coupling 26 by the action of the pump that is forcing the oil from the main reservoir, in the framework, into the reservoir 25. The oil flows through the pipe 35 from the auxiliary reservoir 25 to an oil tube 36, mounted centrally within the mixing chamber 39, said tube being provided with the perforations 37 through which the oil passes to the interior of said tube. A needle valve 38 passes upwardly within the tube 36, and by means of the conical formation of the needle valve-stem 38 and the interior of the tube 36 the outward flow of oil may be regulated. The oil after passing over the conical end of the needle valve 38 is drawn out through the laterally extending holes 40 into the circumferentially extending channel 41 on the periphery of the tube 36. The upper end of the tube 36 snugly fits the interior wall of a nipple 42, so that when the oil is drawn out through the holes 40 it strikes the interior wall of the nipple 42, thence is deflected backward upon the tube 36, by the contracted end of the nipple 42, so that the oil is broken into vapor which is drawn upwardly through the outlet port 46 by the suction of the engine. To maintain a uniform column of oil within the tube 36 and the reservoir 25, I provide the overflow opening 90, to which a suitable pipe is attached for returning the surplus oil to the main reservoir.

With the actuation of the cam 15 its supporting shaft 16 is also moved to open the throttle 48 in the outlet port 46. The shaft 16, carrying the throttle valve 48, is provided on one end with a lever 50, which pivotally engages the lever 51, and the latter lever engages a cam-shaft 52 which extends transversely through the outlet port 46. The shaft 52 is provided with a central bend to form a cam (see Fig. 7) which rests upon the upper end of a vertically disposed cut-off rod 55. The rod 55 operates through a spider 56 and is provided on its lower end with a cap 57. The cap 57 slips downwardly over the upper end of the tube 36 and is provided on its outer and lower end with a beveled edge. When the throttle lever 18 is operated to open the valves 3 and 48, through the cam 15, shaft 16, the actuating-rod 4 and shaft 6, the transverse shaft 52 is actuated, the rod 55 is depressed, which moves the beveled edge of the cap 57 toward the contracted end of the nipple 42, thereby decreasing the spraying qualities of the nozzle formed by the tube 36, nipple 42 and the valve-stem 38. The flow of vapor to the engine must, necessarily, be regulated, for, when the engine is started and running slowly the end of the nozzle must be open so that sufficient vapor can easily be drawn therethrough; whereas when the engine is running rapidly the orifice of the nozzle must be reduced in size, otherwise an excess of vapor is needlessly drawn into the engine without producing a relative amount of energy. When the cut-off rod 55 is released by the reverse movement of the shaft 52, the rod 55 is elevated by means of a spring 60.

It will be noted by the foregoing description that when the throttle lever 18 is operated, the cam 15, throttle valve 3 in the primary air intake 2 and the needle valve 27 in the auxiliary reservoir 25 are all actuated, whereby the supply of oil and air are admitted in their proper proportions to the carbureter to effect complete ignition of the vapor upon which to start the engine. As the speed of the engine increases, a corresponding increased vacuum results within the mixing chamber, caused by the inadequate supply of air available through the primary air intake 2. The deficiency in the supply of air is overcome by the opening of the valve 73 in the secondary air intake 70. The valve 73 rides upon the shaft 76 and is held so as to normally close the mouth of the secondary intake 70, by means of the spring 75. The lower end of this spring rests upon the sleeve 77 which is threaded upon the lower end of the shaft 76. The sleeve 77 has longitudinal movement through the spider 78, but is prevented from turning in said spider by means of the longitudinal rib. See Fig. 9. This construction enables the sleeve 77 to move upwardly on the shaft 76 when the latter is rotated, so as to compress the spring 75 and thereby increase the tension on the valve 73. As the shaft 76 is supported by the cam 80 the spring 75 is thus prevented from expanding, as when the shaft 76 is permitted to move toward the cam when the latter is shifted, so that the full effect of the spring is against the valve 73, holding the latter tightly against the cap 74. When the spring is compressed to secure the desired pressure upon the valve 73 by turning the shaft 76, this adjustment is permanent. The tension of the spring 75 is such, when properly adjusted, as to prevent the valve from opening under normal conditions, by a vacuum created within the carbureter. The tension of the spring 75 against the valve 73 may be reduced however by the will of the operator, so that the valve 73 becomes more sensitive and thus more easily affected when the necessity therefor arises, and the object therefor will be hereinafter described. It is common knowledge that the air supply must be increased when the speed of the engine is

increased which is accomplished by increasing the supply of oil to the carbureter and also increasing the supply of gas furnished to the engine. As has heretofore been stated, this supply of oil is effected by means of the throttle-lever 18 through the cam 15. The valves 27, 48 and 3 all move with the initial movement of the lever 18, and when but slightly moved will enable the engine to start and continue to run at low speed. The cam 80 which supports the shaft 76 is also actuated by means of the cam 15, by which the valves 27, and 3 are actuated, but the movement is delayed somewhat for the reason that the cam 80 relaxes the tension of the valve 73 and permits same to be more easily operated, which occurs at a time when the engine has reached a certain speed. To accomplish this delay in movement of the cam 80, the latter is mounted upon a transverse shaft 69 which is actuated by the cam 15 through the connecting levers 65 and 68. A slotted connection is formed between these levers, thereby permitting the cam 15, valves 27, 48 and 3 to be moved to a predetermined position before the cam 80 is actuated to effect the release of the valve 73.

Fig. 6 illustrates the construction of the cam 15. As the cam is positively attached to the shaft 16 its center cannot conveniently be changed, but to increase or decrease its radius, I provide a band 95 which extends partly around the periphery of the cam to which it is pivoted at 96. The other end of the band 95 is provided with a slot 97 through which a set-screw 98 passes, and by loosening the said screw the band 95 may be moved to or from the axis of the cam, thereby increasing or decreasing its throwing qualities.

Having thus fully described my invention, what I desire to secure by Letters Patent, is—

1. A carbureter of the above specified class comprising a body portion provided with a primary and secondary air intake and a gas outlet port, an auxiliary oil reservoir arranged adjacent to said body, a valve to admit oil to said reservoir, an oil spraying valve communicating with said oil reservoir, means adapted to maintain a uniform oil level within said oil reservoir, a throttle valve within both the primary and secondary air intakes, means for applying tension on the valve in the secondary air intake, a throttle valve within the gas outlet port, and a single means for imparting synchronical movement to actuate the aforesaid oil admission valve, the valve in the primary air intake, the valve in the said gas outlet port, and to relax the tension on the valve in the secondary air intake.

2. A carbureter of the above specified class comprising a body portion provided with a primary and secondary air intake and a gas outlet port, an auxiliary oil reservoir arranged adjacent to said body, a valve to admit oil to said reservoir, an oil spraying valve communicating with said oil reservoir, means adapted to maintain a uniform oil level within said oil reservoir, a throttle valve within both the primary and secondary air intakes, means for applying tension on the valve in the secondary air intake, a throttle valve within the gas outlet port, and means for imparting synchronical movement to actuate the aforesaid oil admission valve; the valve in the primary air intake; the valve in said gas outlet port, and to relax the tension on the valve in the secondary air intake.

3. A carbureter of the above specified class comprising a body portion provided with a primary and secondary air intake and gas outlet port, an auxiliary oil reservoir arranged adjacent to said body, a valve to admit oil to said reservoir, means to normally hold said valve in closed position, an oil spraying valve communicating with said oil reservoir, means adapted to maintain a uniform oil level within said oil reservoir, a throttle valve in the primary air intake, a throttle valve within the secondary air intake, means for imparting tension on the valve in the secondary air intake, a throttle valve within the gas outlet port, and a single operating means adapted to impart synchronical movement to actuate the aforesaid oil admission valve; the valve in the primary air intake; the valve in the gas outlet port; and to relax the pressure on the valve in the secondary air intake.

4. A carbureter of the above specified class comprising a body portion provided with a primary and a secondary air intake and a gas outlet port, an auxiliary oil reservoir arranged adjacent to said body, an oil spraying valve communicating with said oil reservoir, means adapted to maintain a uniform oil level within said reservoir, a throttle valve arranged within both the primary and secondary air intakes, means for imparting tension on the valve in the secondary air intake, and a single operating means adapted to actuate the throttle valve in said primary air intake, and relax the pressure on the valve in the secondary air intake.

5. A carbureter of the above specified class comprising a body portion provided with a primary and a secondary air intake and a gas outlet port, an auxiliary oil reservoir arranged adjacent to said body, an oil spraying valve communicating with said oil reservoir, means adapted to maintain a uniform oil level within said oil reservoir, a throttle valve arranged within both the primary and secondary air intakes, means for imparting tension on the valve in the sec-

ondary air intake, a single operating means adapted to impart synchronical movement to actuate the valve in the primary air intake, and to relax the pressure on the valve in the secondary air intake, and means adapted to return said throttle valves to normal.

In witness whereof, I have hereunto set my hand and seal at Indianapolis, Indiana, this, 11th day of July, A. D. one thousand nine hundred and eight.

MARTIN C. BRIGHT. [L. S.]

Witnesses:

F. W. WOERNER,

L. B. WOERNER.