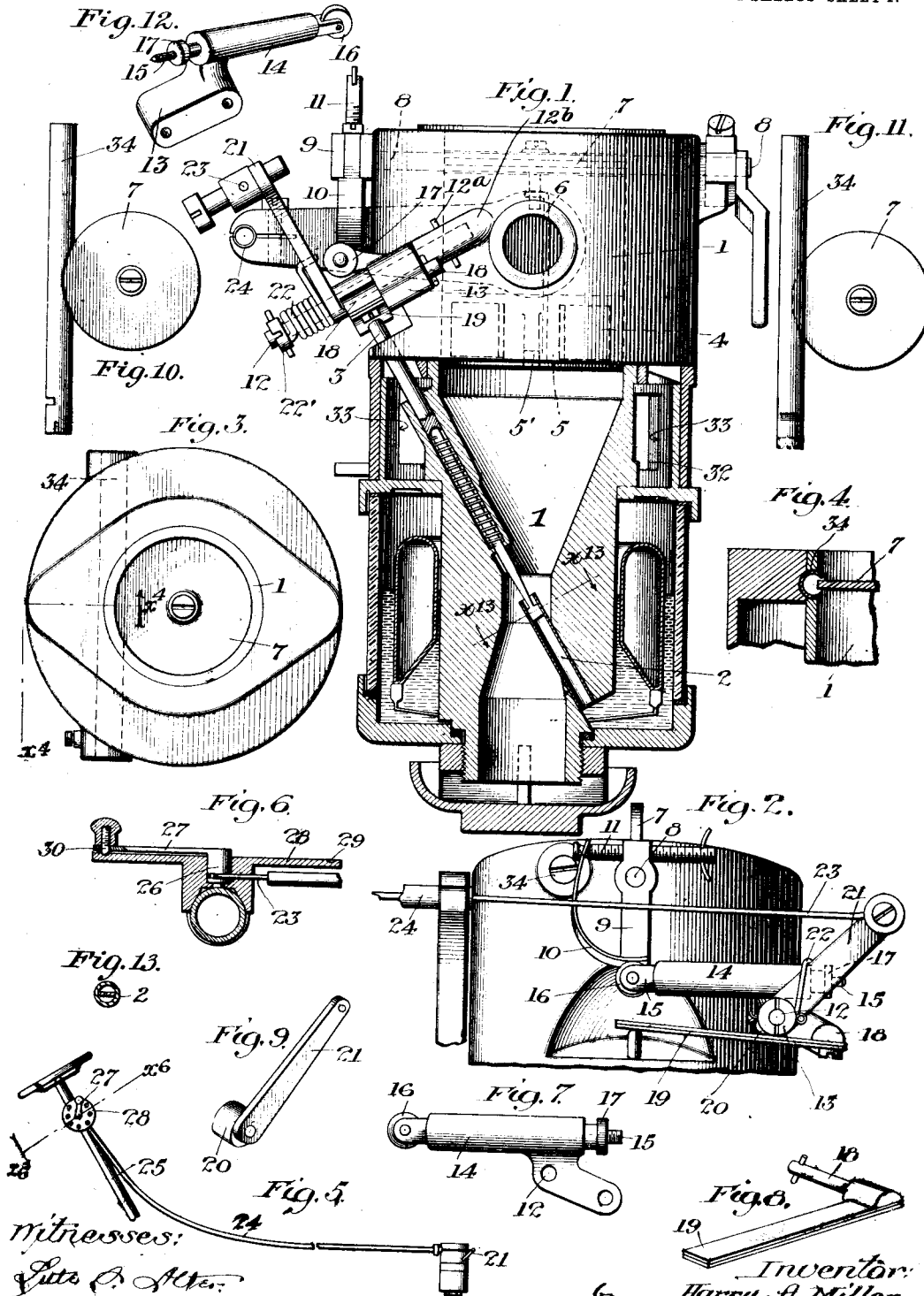


H. A. MILLER.
CARBURETER.
APPLICATION FILED JUNE 7, 1911.

1,065,462.

Patented June 24, 1913.

2 SHEETS—SHEET 1.



Witnesses:
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2 SHEETS—SHEET 2.

Fig. 14.

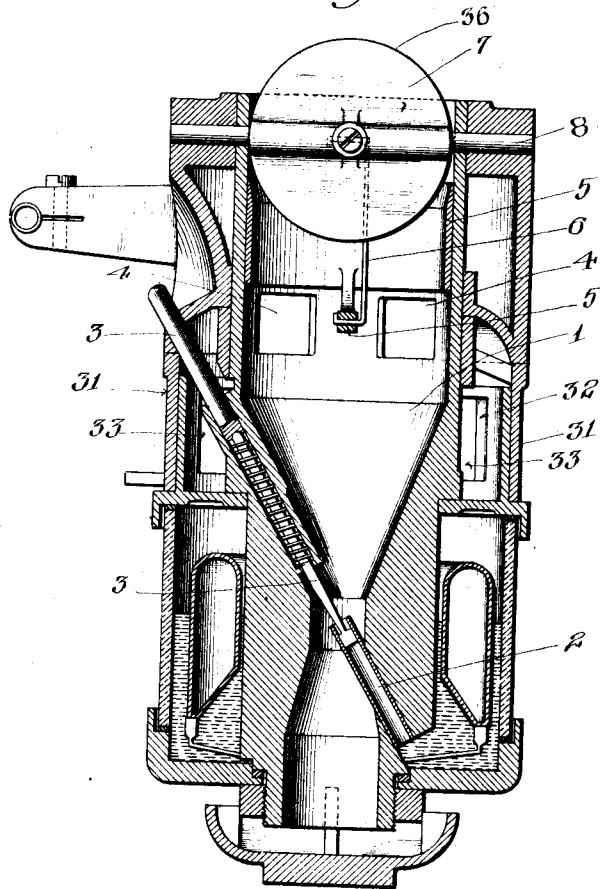
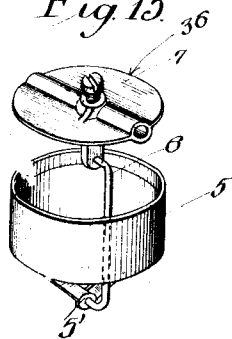


Fig. 15.



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UNITED STATES PATENT OFFICE.

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CARBURETER.

1,063,462.

Specification of Letters Patent.

Patented June 24, 1913.

Application filed June 7, 1911. Serial No. 631,861.

To all whom it may concern:

Be it known that I, HARRY A. MILLER, a citizen of the United States, residing at Los Angeles, in the county of Los Angeles and State of California, have invented a new and useful Improvement in Carbureters, of which the following is a specification.

This invention relates to improvements in carbureters, and relates particularly to means for operating the needle valve mechanically in combination with the throttle valve or independently from the throttle valve, when desired.

In a companion application of mine filed May 27, 1911, Serial No. 629,936, I have shown and described a carbureter in which the nozzle discharges into the carbureting chamber, a mixing chamber above the same, the walls of the mixing chamber having ports, and a sliding sleeve on the interior of the mixing chamber connected with the throttle valve for controlling the admission of auxiliary air through said ports. The present invention embodies those features also, but includes in addition thereto a device for opening the needle valve, the said device being automatically operated whenever the throttle valve is operated, and the said device also being capable of operation independently of the throttle valve, by means of a connection extending from said device to a point adjacent the steering wheel of the automobile.

In the drawings, Figure 1 is a side elevation in part section of the invention, showing the parts in position with the throttle and needle valve closed. Fig. 2 is a side elevation of the upper portion of the carbureter taken at right angles to Fig. 1, showing the position of the parts when the carbureter is adjusted for running. Fig. 3 is a plan view with the side mechanism removed. Fig. 4 is a section on line x^4-x^4 Fig. 3. Fig. 5 is a side elevation on a small scale of the carbureter and a part of the steering wheel, showing the connections therebetween. Fig. 6 is a section on line x^6-x^6 Fig. 5, on a larger scale. Fig. 7 is a side elevation of the sleeve support. Fig. 8 is a perspective view of the needle valve operating spring. Fig. 9 is a perspective in detail of the lever and cam for operating the needle valve operating spring. Fig. 10 is a plan view in detail of the throttle valve and bypass controlling

valve, showing controlling valve opened to give the largest size of bypass. Fig. 11 is a view similar to Fig. 10 showing the controlling valve closed. Fig. 12 is a perspective view of the roller carrying arm. Fig. 13 is a section on line $x^{13}-x^{13}$ of Fig. 1. Fig. 14 is a vertical section of the upper portion of the carbureter. Fig. 15 is a perspective of the sliding valve.

1 designates the carbureting chamber into which the nozzle 2 discharges.

3 is the needle valve extending at an angle and projecting through the side wall of the mixing chamber.

4 designates ports in the side walls of the mixing chamber, and 5 is a sliding sleeve within the mixing chamber for controlling the size of opening through said ports, or for entirely closing said ports, the sliding sleeve having a cross-bar 5' which is connected by a link 6 with the throttle valve 7, so that the sliding sleeve operates in unison with the throttle valve. When the throttle valve is closed, the sleeve closes the ports, and when the throttle valve opens the sleeve opens the ports a corresponding amount.

8 is the throttle valve shaft, and secured thereon is a block 9 carrying a curved band 10, one end of which is engaged by a screw 11 by means of which the curve of the band 10 may be regulated.

A stud 12 is secured by a pin 12^a in a lug 12^b which is formed on the carbureter as shown in Fig. 1. Pivoted on the stud 12 is a head 13 from which projects a sleeve 14 in which is a sliding rod 15 on the end of which is a roller 16 which bears against the band 10, a thumb nut 17 on the threaded end of the rod 15 regulating the position of the roller 16.

The above described parts are substantially similar to those shown in my companion application referred to.

Journalled for rotation in the block 13 is a short shaft 18, to which is secured a flat stiff spring 19 which acts as a spring arm, as shown in detail in Fig. 8. The end bearing against the end of the needle valve 3, so that whenever the throttle valve is adjusted the curved band 10 acting upon the roller 16 tilts the sleeve 14, thereby rocking the head 13 and depressing or raising the spring arm 19, and thus allowing the needle valve to close or open to a position corresponding to the adjustment of the throttle valve. A

closing movement of the throttle valve depresses the spring 19, and closes the needle valve, while an opening movement of the throttle relieves pressure of cam 20 against spring 19 and permits needle valve to rise. Also journaled on the stud 12 is a cam 20 having an arm 21, as shown in Fig. 2 and in detail in Fig. 9. A coil spring 22 has one end engaged by a head 22' on the shaft 12 and encircles the shaft 12 with its other end bent over the edge of the arm 21 which presses the arm 21 in a counter-clockwise direction, and the cam 20 depresses the spring 19 and closes the needle valve a corresponding amount, this action taking place independently of the adjustment of the throttle valve, the latter not being moved during this adjustment. The arm 21 has no connection with sleeve 14, the arm being pivoted on pin 12, and when rocked the arm 21 operates its cam 20 to depress the flat spring 19, the sleeve 14 remaining stationary.

A cable 23 extends from the arm 21 through a tube 24 which extends to a point adjacent the steering post 25, and the end of the cable 23 is secured to a reel 26 which is operated by handle 27 to wind up the cable and operate the arm 21. A disk 28 is provided with shallow depressions 29 which act to detachably hold a sliding spring pressed pawl 30 sliding in the handle 27, as shown in Fig. 6, and thus detachably lock the handle 27 in position.

31 is an external sleeve having ports 32 which are adapted to register with ports 33 in the walls of the mixing chamber. This sleeve 31 is intended to be operated manually and set in the desired position.

34 is a tubular valve which extends tangentially through the upper port of the mixing chamber, and is so constructed that when the throttle valve is entirely closed a slight amount of gasolene and air is permitted to pass by the throttle valve, the size of the opening at the edge 36 of the throttle being determined by adjusting the valve 34.

If with the throttle open, the needle valve permits more gasolene to pass than is proper for operation under the conditions present, as for example, in running down hill, or at a very high speed, the cable is operated to tilt the arms 21 and depress the needle valve, thereby reducing the amount of gasolene in proportion to the air admitted, thereby producing the most economical mixture for fast speeds, and in running down hill the needle valve will be entirely closed and thus no gasolene wasted. It is to be noted that it is possible to close the needle valve without closing the outer sleeve 31. This is an advantage over the structure shown in my companion application, in that the volume of air which is allowed to pass into the carbureter is not reduced when the needle valve is

adjusted toward a closed position. This is particularly advantageous in running at a high altitude or in an atmosphere having very dry air. Under such conditions the air is so light that the full volume of it should be admitted, which the present construction enables.

What I claim is:

1. In a carbureter, a carbureting chamber, a nozzle discharging into the carbureting chamber, a needle valve for said nozzle, a throttle valve, means operated by the throttle valve for operating the needle valve therewith, said means being movable independently of said throttle valve, the side walls of said carbureting chamber having ports, a sliding sleeve in the carbureting chamber for controlling said ports, and a connection between said sliding sleeve and the throttle valve whereby said sleeve is operated with the throttle valve.

2. In a carbureter, a carbureting chamber, a nozzle discharging into the carbureting chamber, a needle valve for said nozzle, a throttle valve, a pivoted head, a spring arm pivoted in said head, and bearing against said needle valve, means operated by the throttle valve for actuating said arm, and means for actuating said arm independently of the last means.

3. In a carbureter, a carbureting chamber, a nozzle discharging into the carbureting chamber, a needle valve for said nozzle, a throttle valve, a pivoted head, a spring arm pivoted in said head and bearing against said needle valve, and means for actuating said arm independently of the last means, comprising a cam bearing against said arm, and a lever projecting from said cam.

4. In a carbureter, a carbureting chamber, a nozzle discharging into the carbureting chamber, a needle valve for said nozzle, a throttle valve, a pivoted head, an arm pivoted in said head and bearing against said needle valve, and means for actuating said arm independently of the last means, comprising a cam bearing against said arm, and a lever projecting from said cam, a mixing chamber having ports in its side walls, a sliding sleeve in the mixing chamber for controlling said ports, a connection from said sliding sleeve to the throttle valve.

5. In a carbureter, a carbureting chamber, a nozzle discharging into the carbureting chamber, a needle valve for said nozzle, a throttle valve, a pivoted head, an arm pivoted in said head, and bearing against said needle valve, and means for actuating said arm independently of the last means, comprising a cam bearing against said arm, and a lever projecting from said cam, a mixing chamber having ports in its side walls, a sliding sleeve in the mixing chamber for controlling said ports, a connection from said sliding sleeve to the throttle valve, a tu-

bular valve extending tangentially through the mixing chamber, and intersecting the path of movement of the throttle valve and allowing gasoline and air to pass the throttle valve when the latter is closed.

5 6. In a carbureter, a carbureting chamber, a nozzle discharging into the carbureting chamber, a needle valve for said nozzle, a throttle valve, a throttle valve shaft, a block
10 on the throttle valve shaft, a cam comprising a curved, flexible band, one end of which is attached to said block, an adjusting screw through said block engaging the other end of the flexible band, a pivoted arm, a spring
15 arm carried thereby and bearing against the needle valve, a roller carried on the end of the pivoted arm, said flexible band bearing against said roller.

7. In a carbureter, a carbureting chamber,
20 a nozzle discharging into the carbureting chamber, a needle valve for said nozzle, a throttle valve, a throttle valve shaft, a block on the throttle valve shaft, a cam comprising a curved, flexible band, one end of which is
25 attached to said block, an adjusting screw through said block engaging the other end of the flexible band, a pivoted arm, a spring arm carried thereby and bearing against the needle valve, a roller carried on the end of

the pivoted arm, said flexible arm bearing 30 against said roller, said roller bearing against said spring arm, a cam bearing against said spring arm, and a lever projecting from said cam for operating the latter to move the spring arm and adjust the 35 needle valve independently of the first mentioned pivoted arm.

8. In a carbureter, a carbureting chamber, a nozzle discharging into the carbureting chamber, a needle valve for said nozzle, a 40 throttle valve, a pivoted head, a spring arm pivoted in said head and bearing against said needle valve, and means for actuating said spring arm independently of the last means, comprising a cam bearing against 45 said spring arm, and a lever projecting from said cam, an arm carried on said head, a cam for adjusting said latter arm, a lug on said latter arm, and a screw through said lug adapted to bear against said spring arm 50 for holding the spring arm in a set position.

In testimony whereof, I have hereunto set my hand at Los Angeles, California, this 26 day of May 1911.

HARRY A. MILLER.

In presence of—

G. T. HACKLEY,
GLADYS RUSSELL.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."