H. L. THOMPSON.

CARBURETER.

APPLICATION FILED APR. 15, 1918.

**1,345,516.** **Patented July 6, 1920.**

*Fig. 1*

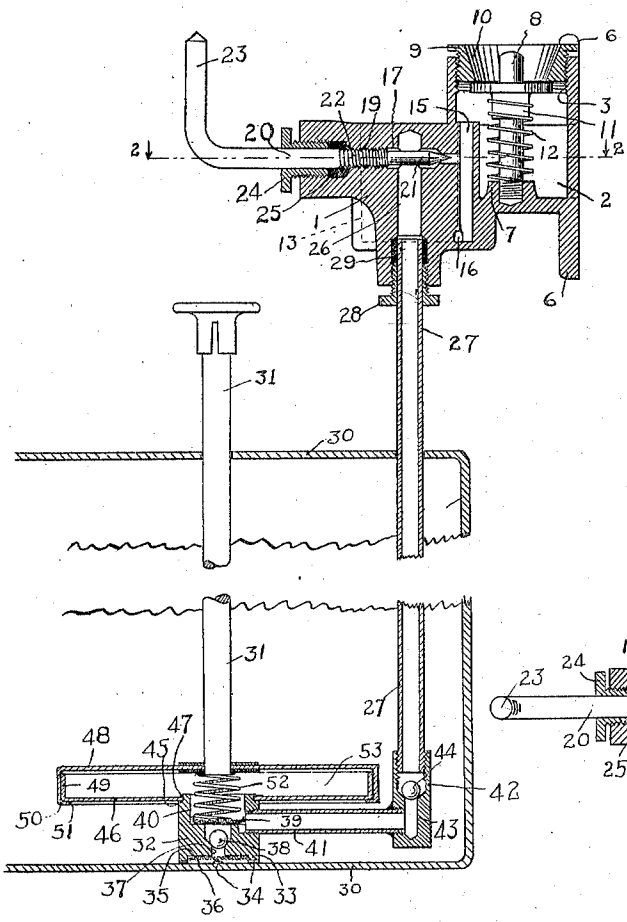



*Fig. 2*

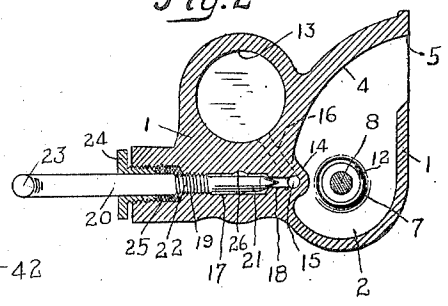
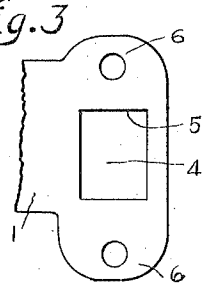



*Fig. 3*




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# UNITED STATES PATENT OFFICE.

HERBERT L. THOMPSON, OF ELGIN, ILLINOIS, ASSIGNOR TO ELGIN GAS MOTOR COMPANY, OF ELGIN, ILLINOIS, A CORPORATION OF ILLINOIS.

## CARBURETER.

1,345,516. Specification of Letters Patent. Patented July 6, 1920.

Application filed April 15, 1918. Serial No. 228,520.

*To all whom it may concern:*

Be it known that I, HERBERT L. THOMPSON, a citizen of the United States, residing at Elgin, in the county of Kane and State of Illinois, have invented certain new and useful Improvements in Carbureters, of which the following is a specification.

This invention relates to a carbureter for gas engines, and the principal object is to provide a simple device of this kind which has few parts, is easily accessible, and unlikely to get out of order. Another object is to provide a construction which may be easily primed in starting the engine. Other objects will appear hereinafter.

The invention consists in the novel construction, combination and arrangement of the parts.

In the accompanying drawing—

Figure 1 is a sectional elevation of a carbureter and priming means constructed in accordance with the principle of the invention.

Fig. 2 is a sectional view taken on line 2—2 of Fig. 1; and

Fig. 3 is a detail view of the end of the carbureter which is attached to the engine.

The carbureter proper comprises a casting member 1 in which is a mixing chamber 2 with an internally threaded portion 3 at its upper end and an outwardly rounding passage 4 at its lower end which is connected through an opening 5 with the manifold or engine to which it is applied. Perforated ears 6 are commonly provided as a part of the member 1 above and below the opening 5 for attaching the carbureter to the part which supports it. Threaded in an upstanding boss 7, at the bottom of the chamber 2, is a pin 8 which extends to the top of the chamber. In the upper end of the portion 3 of this chamber a sleeve 9 is threaded which has a beveled opening 10, at the bottom of which is a valve 11 slidable on the pin 8 and substantially closing the beveled opening 10 of the sleeve. A spring 12 is interposed between the boss 7 and this valve 11 tending to hold it against the bottom of the sleeve member. The variation in position of the sleeve member 9 of course varies the pressure which the spring 12 exerts upon the valve.

At one side of the chamber 2 is a receptacle 13 with its bottom below the bottom of the chamber 2, and with an open top above the bottom of the chamber 2. At one side of the chamber 2 is a projection 14 in which is a passage 15 extending below the bottom of the chamber 2 and substantially level with the bottom of the receptacle 13. Connecting the bottom of this passage 15 and the bottom of the receptacle 13 is a passage 16. The upper end of the passage 15 is within the chamber 2 and above the open top of the receptacle 13 so that any liquid introduced into the passage 15 would first fill the receptacle 13 and would overflow from the top of this receptacle without entering the chamber 2.

Extending into the passage 15, above the bottom of the chamber 2, is a needle valve passage 17 with a narrow portion 18 adjacent the passage and with a threaded portion 19 at some distance therefrom. In this passage a needle valve 20 is inserted which has a pointed end 21 to close the narrow portion 18, a threaded portion 22 fitting the threads 19, and a bent extremity 23 at the outer end by means of which it is easily rotated and adjusted. A packing gland 24 surrounds the needle stem where it emerges from the member 1 and acts upon packing material 25 to make a fluid-tight joint.

Connected with the needle passage 17, between the narrow portion 18 and the threaded portion 19, is an inlet passage 26 into which the unthreaded end of a tube 27 is inserted which is held in place and made fluid-tight in the passage by means of a packing gland 28 and packing 29 of rubber, leather, or other suitable packing material.

Connected to the lower end of the tube 27 is a priming device which is placed at the bottom of a fuel receptacle 30 with an operating stem 31 extending through the top of the receptacle where it is accessible for operation. Resting on the bottom of the receptacle is a supporting block 32, the lower face of which is provided with a ridge 33 in which there are notches 34, the ridge forming a recess 35 in which a screen 36 is secured above the notches 34. Extending upwardly from this recess 35 is a widening passage 37 in which a ball 38 is seated forming an upwardly opening ball valve. At the upper end of this passage 37 is another screen 39 which prevents the ball from escaping, and the passage 37 is further widened to form a small chamber 40, to the bot-

tom of which a pipe 41 is connected. Between the pipe 41 and the lower end of the tubular member 27 is a member 42 formed with a passage 43, in which is a ball valve 44. The opening of the pipe 41 is below the ball and the tube 27 is connected above the valve.

The upper edge of the block 32 is formed with a shoulder 45 upon which a disk 46 is seated with a connecting fillet 47 of solder, or the like, to make a fluid-tight joint. Attached to the lower end of the stem 31 is a similar sheet metal disk 48, which also has a fluid-tight connection with the rod. The outer edge 49 of the disk 46 is turned upwardly, and the outer edge 50 of the upper disk is turned downwardly and below the lower surface of the disk 46 to which it is connected by a solder fillet 51, the disks being thus spaced apart by their bent edges. As the disks are made of sheet material, they have sufficient resilience to permit a considerable compression at the center thereof. Seated in the chamber 40 is a spring 52 which tends to press the upper disk 48 and the rod 31 upwardly, thus tending to separate the disks, the disks thus forming a suction chamber 53 between them which is contracted by pressing upon the rod 31 and expanded by the spring 52.

In the ordinary operation of this device the fuel is drawn upwardly through the pipe 27, through the needle valve and up through the passage 15 into the chamber 2 and out through the passage 4, by the ordinary suction of the engine. At the same time air is drawn from priming cup or receptacle 13 which has its top open to the outside atmosphere through the passages 15 and 16 into chamber 2. Air is also drawn into chamber 2 through valve 11. It will be apparent that the strength and adjustment of spring 12 is such that there will be sufficient resistance to the operation of valve 11 to cause the engine to suck its fuel up from fuel tank 30, as mentioned above. In a carbureter mechanism for an engine of about one-half horsepower I find passages 15 and 16 may be about one-eighth inch in diameter and the interior of tube 27 of about the same or slightly larger diameter. The total height the fuel is to be raised for an engine of this size should not be more than six and one-half or seven inches. For engines of larger sizes these passages would, of course, be increased in sizes accordingly. In the priming action the receptacle 13 is filled, or partially filled with liquid fuel by pressing the rod 31 one or more times with the needle valve open. This causes fuel to be drawn from the bottom of the receptacle 30 through the ball valve in the block 32, the depression of the rod 31 forcing this ball valve closed, but forcing the liquid in the chamber 53 outwardly through the pipe 41 and past the ball valve 44 until the liquid is forced past the needle valve into the passage 15 where it flows through the passage 16 into the bottom of the receptacle 13. The suction from the engine will draw the necessary fuel from the priming receptacle 13 through the passage 15, and after the engine has been started in this manner, the needle valve may be adjusted into the desired position.

I claim:—

1. A device for feeding fuel to an internal combustion engine comprising a carbureter having a mixing chamber and a fuel well having an opening into said mixing chamber above the bottom of the latter; a fuel tank below the carbureter; a feed tube connecting the fuel tank with the fuel well; a priming cup open to the atmosphere outside said carbureter and communicating with said fuel well, the top of the priming cup being below the opening of said well into said mixing chamber; and manually operable means for forcing fuel through the feed tube into the fuel well and the priming cup.

2. A device for feeding fuel to an internal combustion engine comprising a carbureter having a mixing chamber and a fuel well, there being a communication between the top of said well and the upper portion of said mixing chamber; a fuel tank below the carbureter; a feed tube connecting the fuel tank with an intermediate portion of the fuel well; a priming cup open to the outside atmosphere and communicating with the bottom of said feed well, the top of the priming cup being below the top of the well; and a pump for forcing fuel from the fuel tank to the fuel well.

In testimony whereof I have signed my name to this specification on this eighth day of April, A. D. 1918.

HERBERT L. THOMPSON.