A. E. STOKER.

CARBURETER.

APPLICATION FILED FEB. 19, 1909.

955,222. Patented Apr. 19, 1910.

Fig. 1.

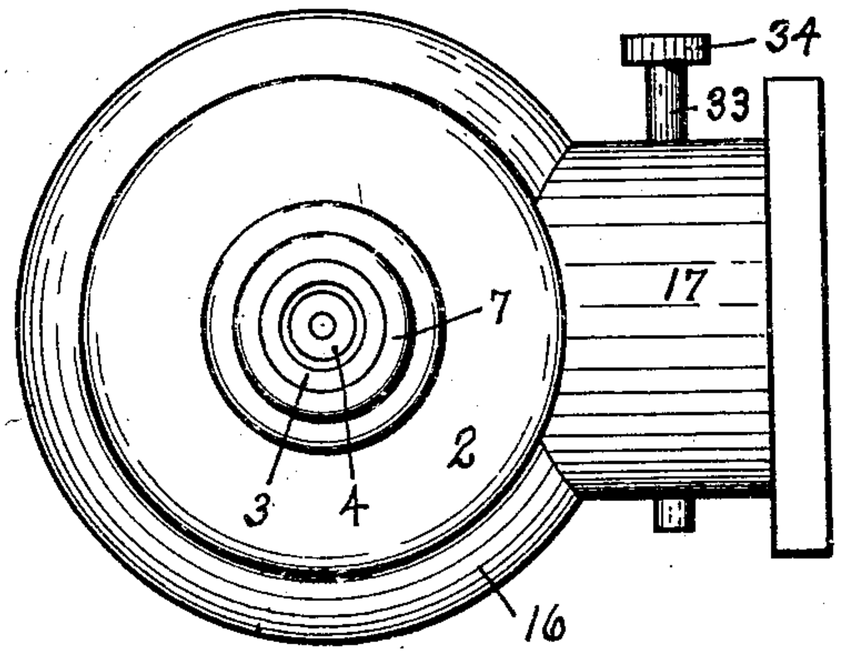


Fig. 3.

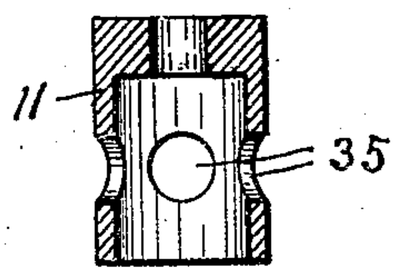
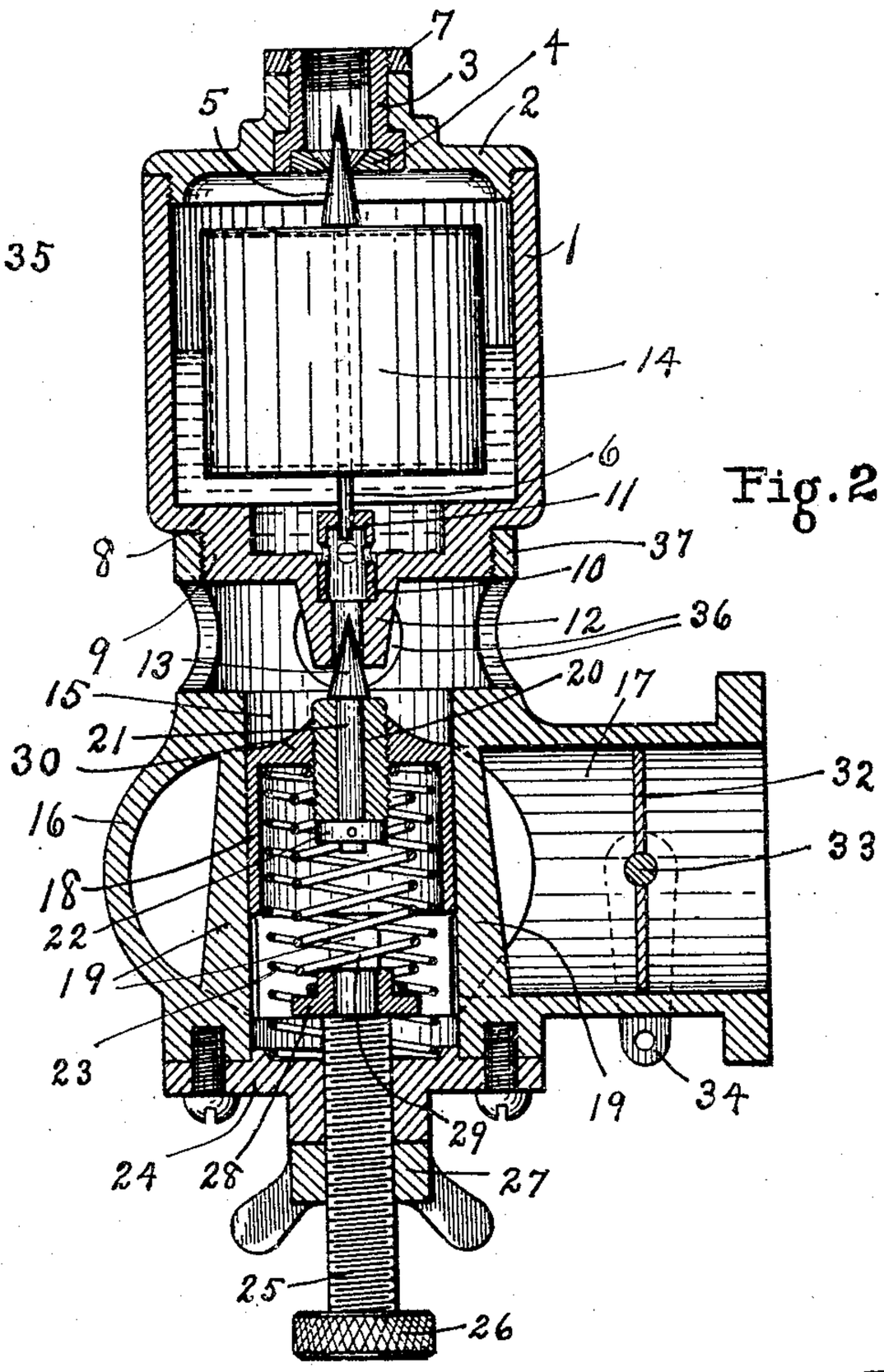


Fig. 2.



Witnesses:
J. A. Serrault
E. M. Brown.

Inventor
Gilbert E. Stoker.
By Edward N. Pagelsen,
Attorney

UNITED STATES PATENT OFFICE.

ALBERT E. STOKER, OF DETROIT, MICHIGAN.

CARBURETER.

955,222. Specification of Letters Patent. **Patented Apr. 19, 1910.**

Application filed February 19, 1909. Serial No. 478,913.

To all whom it may concern:

Be it known that I, ALBERT E. STOKER, a citizen of the United States, and a resident of Detroit, in the county of Wayne and State of Michigan, have invented a new and Improved Carbureter, of which the following is a specification.

This construction relates to carbureters for explosion engines, and the object of this invention is to provide a device so constructed that the effective pressure on the liquid fuel in the fuel receptacle remains constant, irrespective of the throttle opening, and wherein the flow of the fuel from the receptacle is unaffected by the suction within the mixing chamber. I attain this object in the construction illustrated in the accompanying drawing, in which—

Figure 1 is a plan of my improved carbureter. Fig. 2 is a vertical central cross-section of the same. Fig. 3 is a cross section of the guide at the lower end of the stem of the float.

Similar reference characters refer to like parts throughout the several views.

The usual carbureters heretofore constructed employ the suction of the engine to control the flow of the fuel to the mixing chambers. This often results in a waste of fuel because of the imperfect mixture supplied to the engine under varying conditions of load. The restricted fuel passages often found in carbureters of this class are liable to be partially or wholly obstructed by impurities in the liquid fuel, necessitating great skill in the operation of the engine, and often in spite of such skill rendering the operation of the engine uncertain and unsatisfactory.

Where the small fuel passages in carbureters become obstructed, it is usually neccessary to either remove the controlling valves or to entirely dismantle the carbureter.

By practically avoiding any possibility of change of effective pressure on the fuel in its receptacle, and by forming the fuel passages of large diameter, the construction shown in the accompanying drawings is especially adapted for engines which operate under varying loads.

In the drawings a cylindrical fuel oil receptacle or float chamber 1 has a removable top 2 which is bored to receive the sleeve 3. This sleeve carries in a proper bore in its lower end a perforated disk 4, preferably of steel, which forms a "knife-edge" seat for a conical valve 5 on the upper end of a stem 6. A ring 7 screwed onto the upper end of the sleeve 3 holds the sleeve in position, and with it the fuel feed pipe which may be screwed into the sleeve. As the sleeve is revoluble in the top 2, the chamber may be turned to control the flow of the fuel as hereinafter described, without affecting the feed pipe.

The lower head 8 is formed with a threaded shoulder 9, with a cylindrical bore 10, in which is fitted the guide 11 for the lower end of the stem 6, and with a downwardly extending nozzle 12 which forms a seat for the valve 13. A float 14 is secured to the stem 6 and determines the level of the fuel oil in the chamber 1.

The carbureter proper has a globular body or mixing chamber 16 to which a tubular neck 17 is connected. Within this body is a fuel spreader in the form of a piston 18, guided by the upright guide-bars 19. The piston is a shell and is formed with an annular upper end into which may be screwed the sleeve 20. A stem 21 is loosely mounted in this sleeve, being held in position by the collar 22 secured to said stem. The bore of the sleeve is sufficiently large to permit the valve 13 to properly seat itself at the end of the bore in the nozzle 12. The piston is just counterbalanced by the spring 23, which rests on the head 24 secured to the body 16 in any desirable manner and lightly holds the valve 13 against its seat. An adjusting screw 25 having a head 26 is threaded through this head 24 and may be locked in position by the wing-nut 27. A disk 28 journaled on the upper end of the screw supports the adjusting spring 29, which spring may be adjusted to bear against the head 30 of the piston 18. This spring is intended to operate only when the engine is working with open throttle and the spreader piston moves with great speed. When the engine is running light, the spreader piston will play up and down but short distances and can be easily controlled by the spring 23, but with the throttle wide open, the movement of the piston becomes violent and its

stroke would be much greater because of the speed it attains. Just as the top of the piston passes the line of opening between the guides 19, it contacts with the spring 29 which checks its movement and starts it on its return. The spring 23 then completes the return.

An air valve 32, on the transverse shaft 33, may be properly adjusted by the lever 34 on the shaft or by any other desirable means. The operation of this carbureter is as follows.

A pipe or other connection for liquid fuel is secured into the sleeve 3. When a sufficient amount of fuel has entered the float chamber 1, the float will raise the valve 5 to shut off the supply. The fuel may always flow through the holes 35 into the bore of the guide 11 and into the bore of the nozzle 12.

The valve 13 prevents the fuel from flowing down until the valve 32 and the intake port of the engine are opened. When this occurs a suction in the body 16 causes the piston 18 to move down against the pressure of the spring 23, and with the piston, the valve 13 to move from its seat. This permits the liquid fuel to flow from the nozzle 12, which fuel falling on the tapering valve 13 and the inclined head 30 of the piston which acts as a spreader, is spread out into a thin sheet and immediately vaporized by the air which rushes in through the openings 36 in the cylindrical flange 37 that connects the float chamber 1 and the body 16.

The amount of air is regulated by the valve 32 and it passes down between the guides 19 and around the piston and through between the springs. The position of the valve 13 with reference to the piston 18 is controlled by the sleeve 20, which is adjusted at the factory. When fuel has been drawn from the receptacle by lowering the valve 13, the float will drop, permitting fuel to flow into the receptacle.

The body of the mixing chamber and the guides 19 are bored to permit free movement of the piston 18. The upper edges of the spaces between the guides are in a line which is the lower line of a bore 15 in the upper part of the mixing chamber. The distance the piston travels up into this bore is determined by the distance the lower end of the nozzle 12 is from the lower edge of the bore, and this distance may be varied by adjusting the float chamber up or down.

Under a given throttle opening, the piston will always move practically the same distance down out of the bore 15. Therefore, when the float chamber is high, and the piston travels some distance before it passes down out of the bore, the valve 13 will move a greater distance from its seat than when the float chamber is low. The height of the float chamber will therefore have a controlling influence on the feed.

For open throttle, the rush of air through the openings 36, and down the bore 15 and between the guides 19 will pull down the piston a greater distance than with partially closed throttle, or until it is stopped and returned by the spring 29, the result being that the valve 13 will be off its seat a greater distance and longer time. By having this spring 29 adjustable, the operation of the piston and of the valve 13 can be fully controlled.

Having now explained my improvements, what I claim as my invention and desire to secure by Letters Patent is:—

1. In a carbureter, the combination of a mixing chamber having a circular bore to admit air and an outlet passage, a piston valve adapted to close said bore, a coil-spring to carry the weight of said valve, and an adjustable spring to regulate the travel of the valve.

2. In a carbureter, the combination of a mixing chamber having a cylindrical flange provided with air inlets, a fuel receptacle centrally and adjustably mounted above said mixing chamber and having a central opening in its bottom surrounded by a valve seat, a piston in said mixing chamber, a conical valve mounted on said piston to engage the valve seat on the fuel receptacle and control the flow of fuel therefrom, and a spring to hold said valve against the seat, said mixing chamber having an outlet for the vaporized fuel.

3. In a carbureter, the combination of a spherical mixing chamber having a circular bore through its upper wall, upright guides extending across said chamber and having their ends united therewith, a piston adapted to close said bore and movably mounted between said guides, an adjustable sleeve centrally mounted in said piston, a conical valve swiveled in said sleeve, said chamber having a cylindrical flange provided with inlet openings and projecting upward concentric with said piston, a fuel receptacle mounted above the flange, and having a fuel discharge opening in its bottom adapted to be closed by said conical valve, said mixing chamber having an outlet connection communicating with the space around said upright guides, and a throttle valve mounted in said connection.

4. In a carbureter, the combination of a mixing chamber having a circular bore to admit air and an outlet passage, an upwardly extending cylindrical flange surrounding the circular bore and a float chamber adjustably mounted on the flange and having a fuel discharge opening, a piston valve adapted to close the fuel discharge opening and the circular bore of the mixing

chamber, a coil-spring to carry the weight of said valve, and an adjustable spring to regulate the travel of the valve, said cylindrical flange having inlets wherethrough air may enter to pass to the circular bore in the mixing chamber.

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

ALBERT E. STOKER.

Witnesses:
ELIZABETH M. BROWN,
EDWARD N. PAGELSEN.