A. WINTON.

CARBURETER.

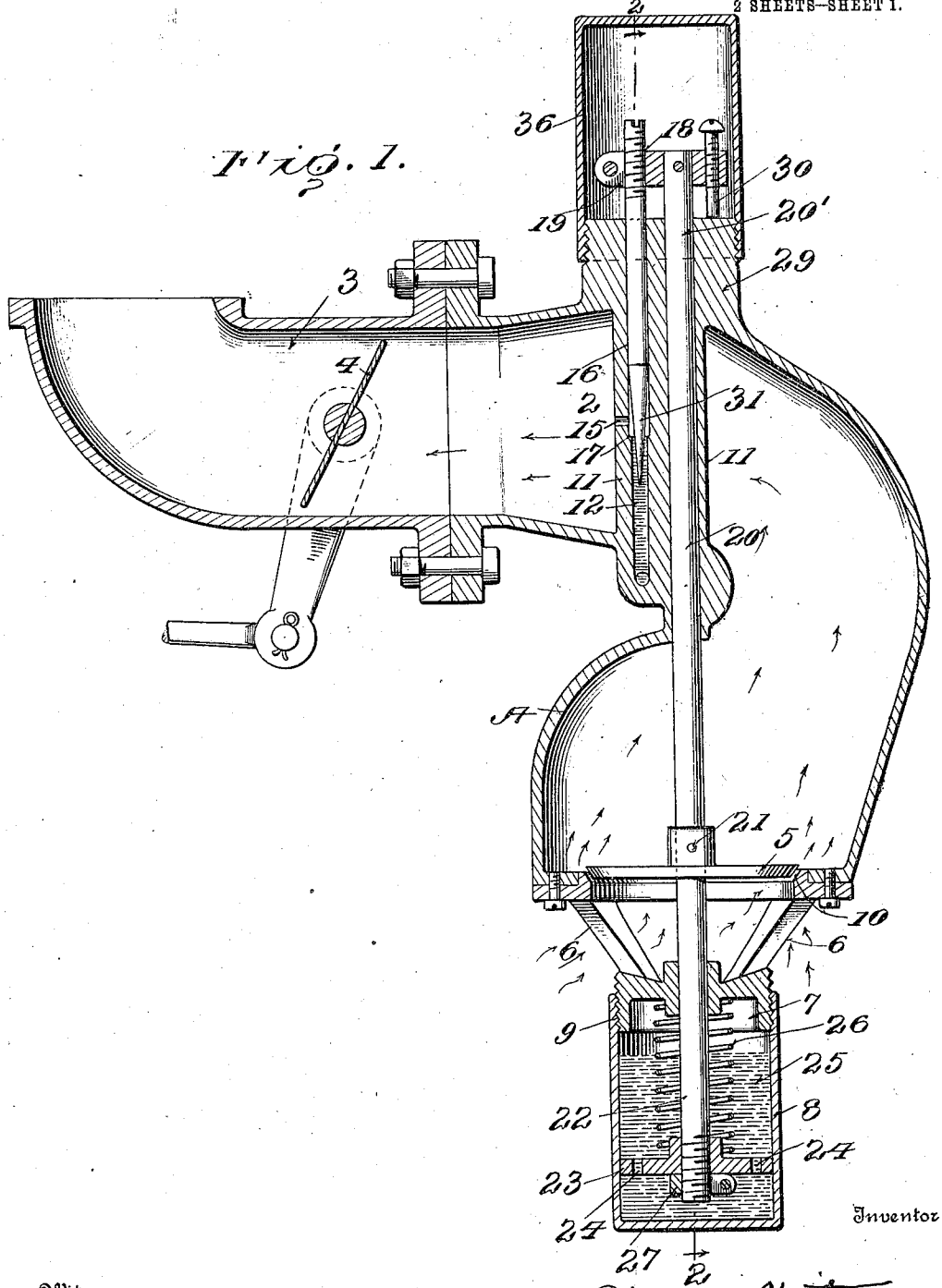
APPLICATION FILED FEB. 8, 1909.

984,874.

Patented Feb. 21, 1911.

2 SHEETS—SHEET 1.

Fig. 1.



Witnesses

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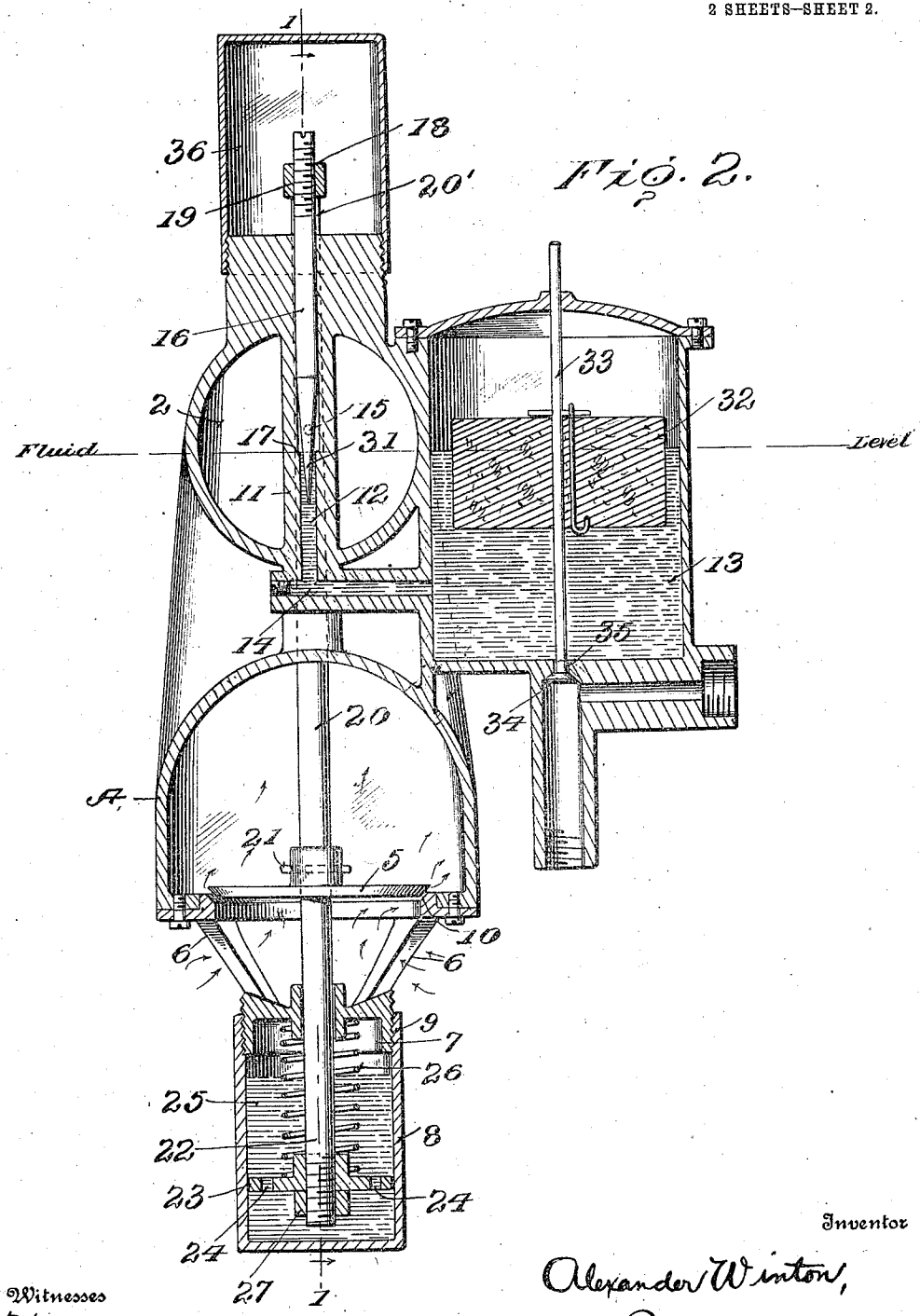
2 SHEETS—SHEET 2.

Fig. 2.



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UNITED STATES PATENT OFFICE.

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CARBURETER.

984,874. Specification of Letters Patent. Patented Feb. 21, 1911.

Application filed February 8, 1909. Serial No. 476,619.

To all whom it may concern:

Be it known that I, ALEXANDER WINTON, a citizen of the United States, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Carbureters, of which the following is a specification, reference being had therein to the accompanying drawing.

This invention relates to improvements in carbureters, and pertains to a type of carbureter in which the gasolene feed or flow is automatically controlled by the amount or volume of explosive mixture (which is now commonly termed "gas") which is permitted to pass to the engine cylinder or cylinders.

This invention is adapted to be used either with the "butterfly" type of throttle here shown, or with that type shown in my prior Patents #626,120, May 30th, 1899; #626,121, May 30th, 1899, and #635,218, October 17th, 1899, in which the explosive inlet valve or valves act as a throttle to regulate and control the flow of gas to the engine cylinder, and in turn controls the speed and power of the engine.

This present improvement comprises means for controlling the flow of gasolene according to the volume of gas passing to the engine cylinder, which is not connected with the throttle element, though it is controlled thereby, as will fully appear hereinafter.

In the accompanying drawings, Figure 1, is a vertical section of a carbureter embodying my invention, taken centrally through the air passage. Fig. 2, is a vertical section of the same, taken at right angles to Fig. 1.

In carrying out the present invention, I preferably provide an air passage A which has a vertically-extending portion 1 at its lower end, and a horizontally-extending portion 2 at its upper end. The upper end is suitably connected with a passage 3, and this passage is connected in any suitable manner with the engine cylinder, which is not here shown. Placed in the passage 3 is a suitable throttle 4, and closing the lower end of the passage A is an air-actuated valve 5. Projecting downwardly from the lower end of the air passage 3 is an arm or arms 6, and the lower ends of these arms carry a suitable casting 7, which forms the top of a removable dash-pot 8. The upper end of this dash-pot is internally screw-threaded, and the cap or casting 7 is externally screw-threaded to mesh with each other, as shown at 9. The air passes or flows into the passage-way 1 between the arms 6 and through the opening 10 in the lower end of the passage-way A, which, as before stated, is controlled by the air or pressure actuated valve 5.

A vertical web 11 passes across the horizontal portion 2 of the air passage A, and this web is provided with a vertical gasolene conduit 12, the lower end of which is in communication with a gasolene chamber 13 through the means of a conduit 14. The upper portion of the conduit 12 is provided with a gasolene exit 15 through which the gasolene is sucked into the horizontal portion of the air passage. A needle-valve 16 is vertically arranged in this web 11, and is adapted to seat therein at the point 17 for the purpose of controlling the flow of the gasolene through the conduit 12 to the outlet 15. This needle-valve 16 projects through and beyond the passage-way and has its projecting stem 18 externally screw-threaded and receiving an arm 19, which arm is carried by the upper projecting end 20′ of a rod or stem 20. The rod or stem 20 also passes through the web 11, and is attached to and moved with and by the valve 5, the attachment being as here shown by a pin 21. This rod or stem passes through the valve 5, through the dash-pot cap 7, and has its lower end 22 extending centrally into the dash-pot. Connected adjustably to the lower end 22 is a piston 23 which moves freely within the dash-pot, and this piston may be provided with a plurality of openings 24 to permit it to move through the liquid 25 placed therein, which liquid is preferably glycerin. A suitable spring 26 serves to normally press downward upon the stem 20, and as here shown, this spring is in the form of a spiral and has its lower end engaging the piston 23 and its upper end abutting against the under side of the dash-pot cap 7. A suitable adjustable nut 27 is placed upon the projecting stem end 22 and below the piston, whereby the piston may be adjusted and the tension of the spring 28 regulated, which in turn controls the pressure of the valve 5 upon its seat, and thereby determines the amount of air pressure necessary to lift the valve, in the manner to be presently explained. Passing through the arm 19 and adapted to engage the end of the bushing or

projection 29, is an adjustable screw 30, by means of which the needle-valve 16 and the valve 5 may be slightly lifted from their seats for the purpose of setting them at a point for the minimum supply of gasolene and air for the minimum speed of the engine.

In operation, when the throttle 4, is slightly open, air is drawn through the passage-way A by the suction of the engine piston or pistons, which creates a tendency to a vacuum in the passage-way A and causes the air to flow therethrough in the direction indicated by arrows in Fig. 1. The throttle controls the volume of gas which is permitted to flow to the engine, and thereby controls the volume of air which passes to and through the air passage A. With the throttle slightly open for minimum speed, sufficient air will flow by the valve 5 without materially lifting it, and this air flowing past the gasolene exit 15 draws or sucks the gasolene through this passage into the horizontal portion 2, and the air having the gasolene mixed with it, then becomes what is usually termed in automobile parlance, as "gas." As the throttle 4 is open wide, the volume of air passing to and through the air passage A is correspondingly increased, and also its velocity, which will cause the valve 5 to be lifted and the needle-valve 16 correspondingly lifted, to permit the proper proportion of gasolene to flow to properly carburet the volume of air. It is understood, of course, that the taper 31 of the needle-valve is so shaped that the volume of gasolene permitted to flow through the conduit 12 to the exit 15 is in the proper proportion to the amount of air which passes the valve 5 at its various elevations or distances from its seat, which will insure the proper carburetion of the air for the best and most economical results in the engine. In this manner, the volume of air and the volume of gasolene are automatically controlled in the proper relative proportion by the volume of air passing through the air passage, and this in turn is controlled by the throttle 4.

As previously stated, this invention is adapted to be used with any form of throttling element, either that of the "butterfly" form here shown, or of that form shown in my prior patents herein referred to. The main feature of the present improvement being the proportionate control of the gasolene supply to the volume of air that is passing through to be carbureted, and formed into what is commonly referred to as "gas."

The object of the dash-pot 8 is to prevent the fluttering of the air valve 5 and the gasolene valve 16, so that their movements will be steady.

The gasolene chamber 13, from which the gasolene flows to the conduits 12 and 14, is provided with any suitable form of device for maintaining the gasolene therein at a predetermined level, so that the gasolene in turn is maintained in the conduit 12 at a level corresponding to the level in the chamber 13. As here shown, this is accomplished through the medium of a float 32 which is connected to the stem 33 of a valve 34. This valve 34 will close the gasolene opening 35 to the said chamber 13 when the gasolene in the chamber has reached the predetermined level. This level is placed at the proper point in relation to the outlet passage 15, and the level here shown is not intended to be the exact level to be used in the practical operation of the carbureter but only approximately the predetermined level.

By removing the cup 8 access may be had to the adjusting nut 23 for the purpose of regulating the tension of the spring 26, and a cup-shaped cap 36 is placed over the upper end of the needle-valve 16 and the stem 20. The screw 30 holding the stem 20 and valve 5 at the adjusted position, the needle-valve may be adjusted by turning it in respect to its seat 17, after which the taper 31 will take care of the proportionate feed of the gasolene in accordance to the amount of air that is to be carbureted.

Having thus described this invention, what is claimed and desired to be secured by Letters Patent, is:—

1. A carbureter provided with an air passage having an air inlet and a mixture outlet, a gasolene conduit having an exit within the air passage, means maintaining an oil level in the conduit below said exit, and between its ends, a throttling element located beyond the gasolene exit, a gasolene valve controlling the flow of gasolene through said gasolene exit, and a valve at the air passage inlet and opened in proportion to the volume of air passing through the air passage, the gasolene and air inlet valves connected and opening and closing together and means normally holding said valves slightly open, for the purpose described.

2. A carbureter provided with an air passage having an air inlet and an air outlet, a gasolene conduit having an exit within and between the ends of the air passage, a gasolene valve controlling the flow of gasolene through said gasolene exit, a valve located at the air passage inlet and opened a distance according to the volume of air passing through the said passage, a connection between said valves to cause them to open and close together, and an adjustable means for limiting the closing movements of the said valves.

3. A carbureter provided with an air passage having an air inlet and an air outlet, a gasolene conduit having an exit opening in said passage, a vertical valve controlling the flow of gasolene through said gasolene exit, a valve located at the air passage inlet and

actuated by the air passing therethrough, the latter valve having a stem thereabove carrying an arm directly and positively connected to the gasolene controlling valve, a dash pot below the inlet of the air passage, a piston therein positively connected with the valve at the inlet end of the air passage.

In testimony whereof I affix my signature in presence of two witnesses.

ALEXANDER WINTON.

Witnesses:
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