A. WINTON & H. B. ANDERSON.

CARBURETER.

APPLICATION FILED MAR. 6, 1907.

906,980.

Patented Dec. 15, 1908.

Fig. 1.

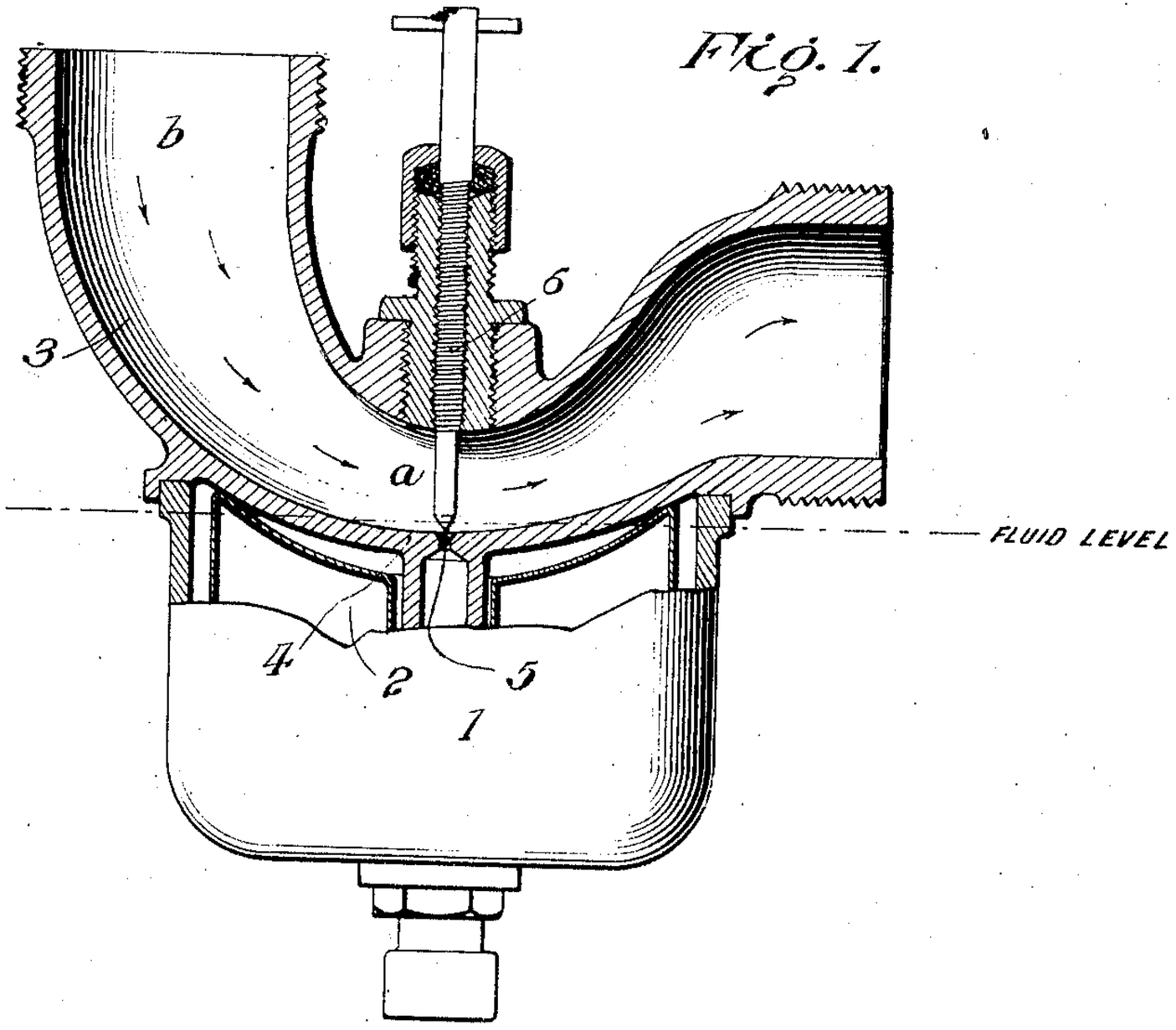
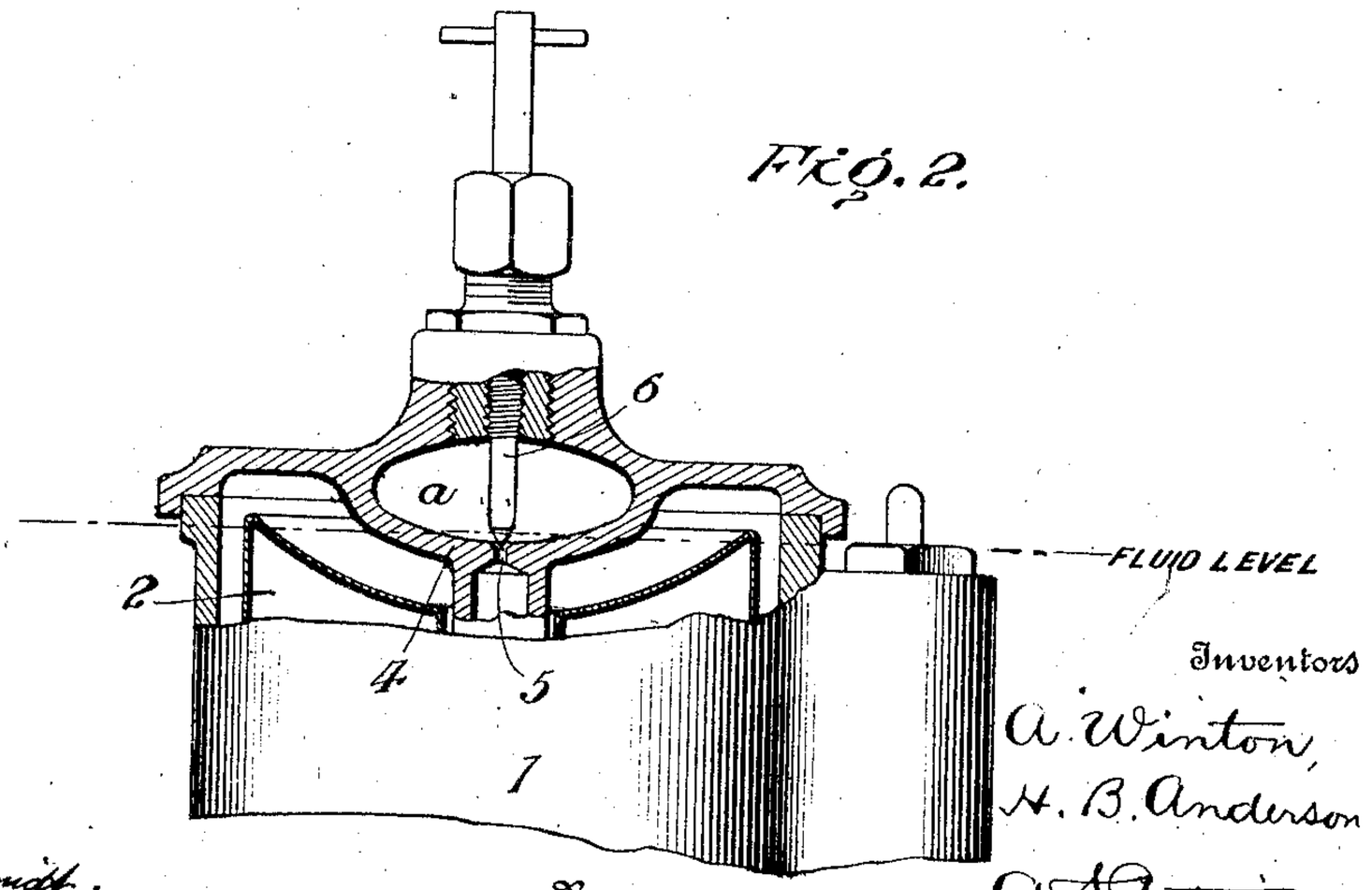


Fig. 2.



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UNITED STATES PATENT OFFICE.

ALEXANDER WINTON AND HAROLD B. ANDERSON, OF CLEVELAND, OHIO, ASSIGNORS TO THE WINTON MOTOR CARRIAGE COMPANY, OF CLEVELAND, OHIO.

CARBURETER.

No. 906,980. Specification of Letters Patent. Patented Dec. 15, 1908.

Application filed March 6, 1907. Serial No. 360,895.

To all whom it may concern:

Be it known that we, ALEXANDER WINTON and HAROLD B. ANDERSON, citizens 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 is designed for use in connection with explosive engines to furnish a uniform explosive mixture therefor.

The particular improvement herein referred to involves the method disclosed and claimed in our co-pending application Ser. No. 323,117, in which the slowly moving volumes of air are subjected to surface carburetion, and the rapidly moving volumes of air subjected to spray carburetion.

There are now in general use two forms of mechanisms for throttling or controlling the speed and power of an explosive motor, viz—those in which the inlet valves act as a throttle by limiting their opening movements, and those in which the inlet valves are mechanically or otherwise opened wide, and the throttling effected by a gate or valve in the passage-way between the carbureter and the inlet valves. It is found that in the first form of motor controlling means, the air passes through the carbureter in pulsating waves even at the lowest velocities which obtain for the lowest operation of the motor. In the second form of controlling means with the throttle nearly closed for low speeds the velocity of the air through the carbureter is constant, but very low. In the first form the pulsating waves pass through the carbureter relatively fast, (especially at low speeds) as compared with the velocity of the passage of the air through the carbureter in the second form. For these reasons it is more difficult to obtain a uniform mixture for an engine having the second form of controlling means for all of its various speeds, from minimum to maximum, than it is in the first form, and especially is this true with the second form of motor at its low speeds.

The object of the present invention is to provide an improved construction of carbureter having the method disclosed in our aforementioned co-pending application to better meet these different conditions of the different forms of controlling mechanisms.

With this end in view our present invention involves an improved construction whereby the air which is passing through the carbureter at a constant though low velocity, as well as the pulsating waves of air, are more perfectly and more properly carbureted by surface exposure of the fluid thereto.

In the accompanying drawings, Figure 1, is a sectional view of our improved carbureter taken longitudinally through the air passage. Fig. 2, is a transverse central sectional view thereof.

In carrying out this invention, there is provided a fluid receiving chamber 1 in which there is a float 2 adapted to maintain a fluid level within the chamber in any desired way, several forms of which are now well known to those skilled in this art, and any description thereof is deemed unnecessary. Passing across the upper portion of this chamber 1 is an air passage 3, the lower wall of which at its lowest point 4 is slightly below the "fluid level", as shown in Figs. 1 and 2, whereby provision is made for maintaining a body of fluid in the air passage to the surface of which the air passing through is subjected. A fluid passage-way 5 establishes communication between the chamber 1 and the air passage 3, through which the fluid passes to within the air passage. A suitable valve 6 is provided for controlling the rapidity of the passage of the oil through the opening 5 to the air passage.

In operation, in all forms of motors, with all forms of throttles or controlling mechanisms, the air passes through the carbureter slower when the engine is throttled down than it does when the throttle is open—that is, passes through slower when the engine is running slow than it does when the engine is running fast. When the engine is running at slow speeds a body of fluid is maintained within the air passage to which the air is directly subjected, causing surface carburetion thereof. When the engine is running at higher speeds a larger amount of fluid or gasolene is required to carburize the increased amount of air passing through the air passage, and at such times the gasolene is sucked through the opening 5 into the air passage 3 in larger quantities than it is supplied by the maintained gravity feed, and the increased volumes of air are subjected to a fluid spray to meet the demands thereof for proper carburetion.

In order to cause a proper carburetion of the air which is passing through the carbureter at a low but constant velocity, the air passage 3 is flattened at the point where surface exposure occurs, which accomplishes this result principally by deflecting the air down and causing it to travel close to and directly against the gasolene, for it is found that the air moving at low but constant velocities has a tendency to take the shorter course and travel close to and against the upper wall of the air passage. This construction also provides an increased surface exposure of the fluid without increasing its volume, thus providing a more thorough carburetion of the relatively slowly moving volumes of air. There are many ways in which this result can be accomplished in a carbureter involving this method with the teachings of this improvement at hand, and we do not therefore limit ourselves to this specific manner of accomplishing this result, the broad idea involving the spreading out or deflecting of the air against a surface of volatile fluid. In other words, the flattening out of the air at the point of surface fluid exposure.

Many difficulties have arisen in constructing a carbureter involving the combined proper and automatic carburetion of slowly moving volumes of air by surface exposure of the fluid, and spray carburetion of the rapidly moving volumes of air. We have thus far discovered that in order to properly effect this combined automatic result, the areas of the air passage at the points of oil supply and air entrance thereto, should be substantially as one, to one and seventy-seven one-hundredths (1 to $1\frac{77}{100}$)—that is to say, at the point *a* the air passage-way should be of an area substantially as one is compared to an area of one and seventy-seven one-hundredths at the entrance *b*. Substantially this proportionate area is thus far found necessary, not only to accomplish the combined surface and spray action, but also to at the same time allow sufficient air to pass to the motor at all of its various speeds. As here shown, the area at the point *a* is less than the area at the entrance *b*, and is intended to represent the areas hereinbefore referred to, but these relative areas have not been accurately worked out in the drawings.

The construction here shown for causing the air passing the oil inlet of the air passage to travel close to and against the exposed oil surface when moving at relatively slow velocities, whether those velocities be constant or in pulsating waves, is the flattening of the air passage at the points just mentioned, as shown in Fig. 2, though this result may be accomplished in other ways without departing from the scope of this invention.

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

1. A carbureter for the purpose described having an air passage provided with a fluid inlet, means for maintaining a body of oil within the passage by gravity flow through the inlet to subject slowly-moving volumes of air to surface carburetion, the inlet restricted to require suction of the fluid through it to subject rapidly-moving volumes of air to spray carburetion, said passage-way constructed at the fluid exposed point to deflect the passing volumes of air against and close to the exposed oil surface.

2. A carbureter for the purpose described having an air passage-way provided with a fluid inlet, means for the maintenance of a body of exposed fluid in the air passage by gravity flow through said inlet for surface carburetion of slowly-moving volumes of air, the inlet so restricted as to require suction of the fluid therethrough for spray carburetion of rapidly-moving volumes of air, the points of oil surface exposure and air entrance to said passage having relative areas substantially as one to one and seventy-seven one-hundredths.

3. A carbureter for the purpose described having an air passage-way provided with a fluid inlet, means for the maintenance of a body of oil in the air passage by gravity flow through said inlet for surface carburetion of slowly-moving volumes of air, the inlet so restricted as to require suction of the fluid therethrough for spray carburetion of rapidly-moving volumes of air, said passage-way being of greater width than depth at the point of oil surface exposure.

4. A carbureter for the purpose described having an air passage provided with a fluid inlet, means for the maintenance of a body of oil therein by gravity flow through said inlet for surface carburetion of slowly-moving volumes of air, the inlet so restricted as to require suction of the fluid therethrough for fluid spray within the passage for spray carburetion of rapidly-moving volumes of air, said passage-way being flattened in a horizontal direction at the point of fluid surface exposure.

5. A carbureter for the purpose described having an air passage provided with a fluid inlet, means for the maintenance of a body of oil therein by gravity flow through said inlet for surface carburetion of slowly-moving volumes of air, the inlet so restricted as to require suction therethrough for spray carburetion of rapidly-moving volumes of air, said passage having a smaller area air passage at the point of fluid exposure than at the point of air entrance thereto, said smaller area constructed to deflect all of the passing air towards and against the exposed fluid.

6. A carbureter for the purpose described

having an air passage provided with a fluid inlet, means for the maintenance of a body of oil therein by gravity flow through said inlet for surface carburetion of slowly-moving volumes of air, the inlet so restricted as to require suction therethrough for fluid spray carburetion of rapidly-moving volumes of air, said passage having a smaller area at the fluid exposed point than at the point of air entrance thereto, said smaller area having greater width than depth, for the purpose described.

7. A carbureter for the purpose described having an air passage provided with a fluid inlet, means for the maintenance of a body of oil therein by gravity flow through the inlet for surface carburetion of slowly-moving volumes of air, the inlet so restricted as to require suction therethrough for spray carburetion of rapidly-moving volumes of air, said passage having a smaller air passage area at the point of fluid exposure than at the point of air entrance thereto, the said smaller air passage area flattened out in a horizontal direction for the purpose described.

8. A carbureter for the purpose described having an air passage provided with a fluid inlet, means for the maintenance of a body of exposed fluid therein by gravity flow through the inlet for surface carburetion of slowly-moving volumes of air, the inlet so restricted as to require suction therethrough for spray carburetion of rapidly-moving volumes of air, said air passage at the point of oil exposure constructed to deflect the air into contact with the fluid and having an area substantially as one, and the air entrance to the passage having an area substantially as one and seventy-seven one-hundredths.

9. A carbureter for the purpose described having an air passage provided with a fluid inlet, means for the maintenance of a body of exposed fluid therein by gravity flow through the inlet for carburetion of slowly-moving volumes of air, and the inlet so restricted as to require suction therethrough for spray carburetion of rapidly-moving volumes of air, the passage at the point of oil exposure having greater width than depth and an area substantially as one compared with an air entrance to the passage having an area substantially one and seventy-seven one-hundredths.

In testimony whereof we affix our signatures in presence of two witnesses.

ALEXANDER WINTON.
HAROLD B. ANDERSON.

Witnesses:
I. F. BAUGHMAN,
M. J. WESTROPP.