M. R. ANSTICE.

CARBURETER.

APPLICATION FILED JAN. 9, 1911.

1,038,262.

Patented Sept. 10, 1912.

3 SHEETS—SHEET 1.

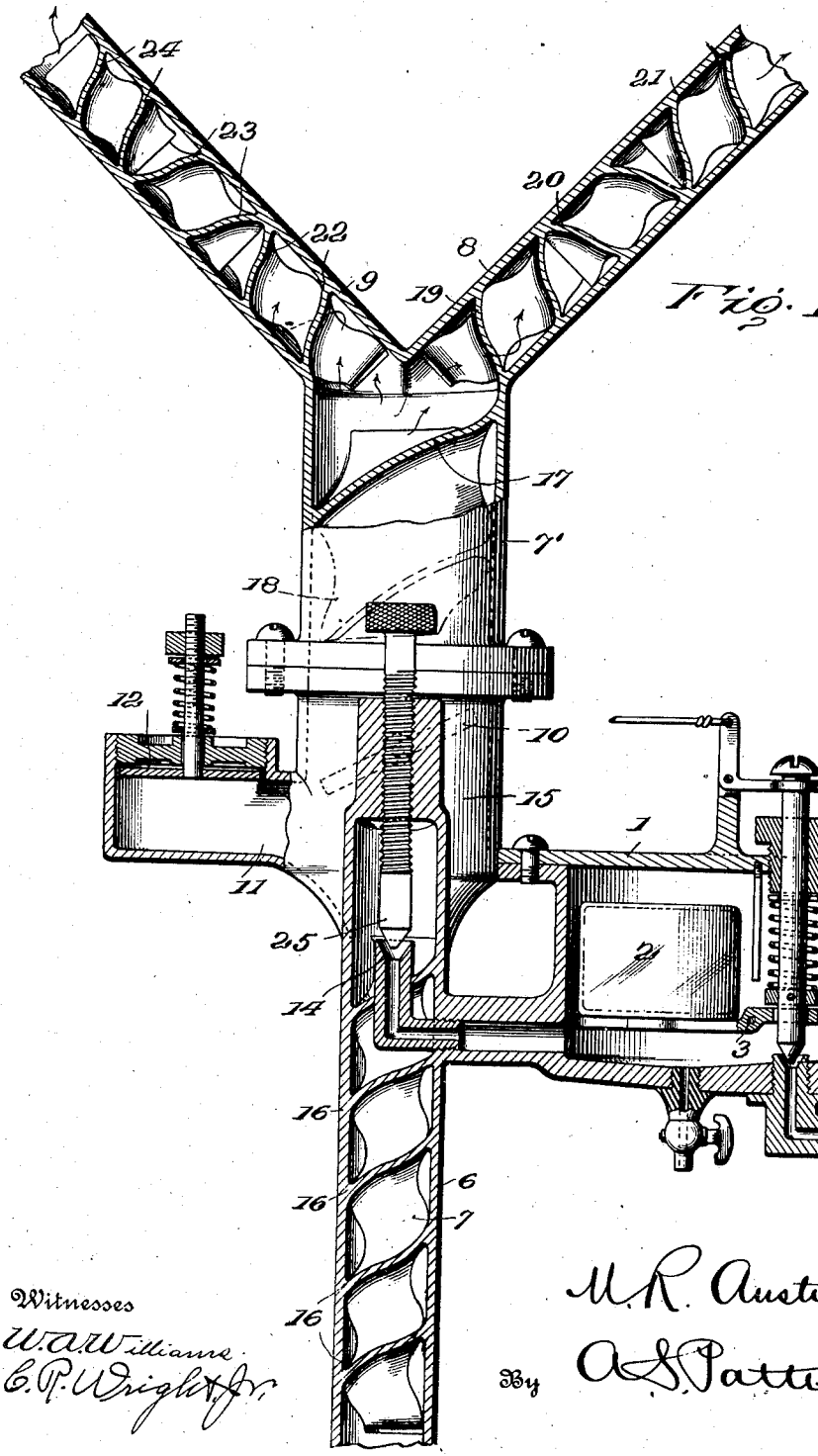

Fig. 1.

Witnesses

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3 SHEETS—SHEET 2.

Fig. 2.

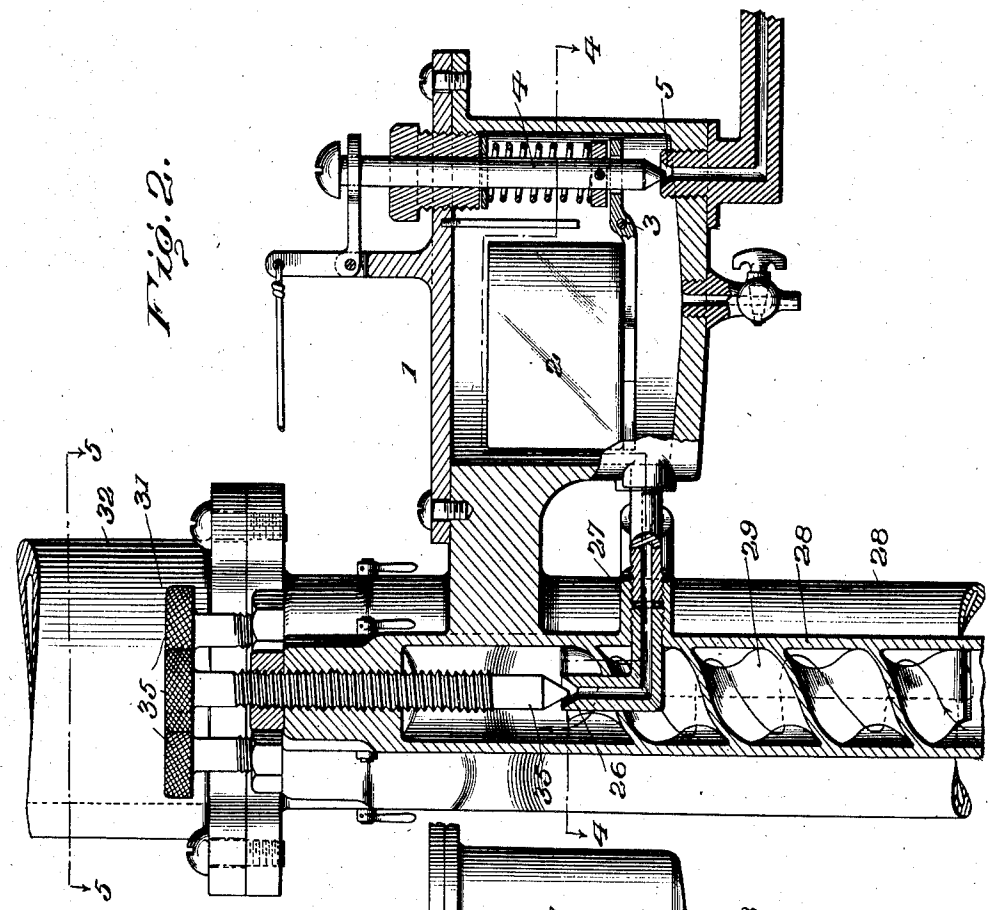
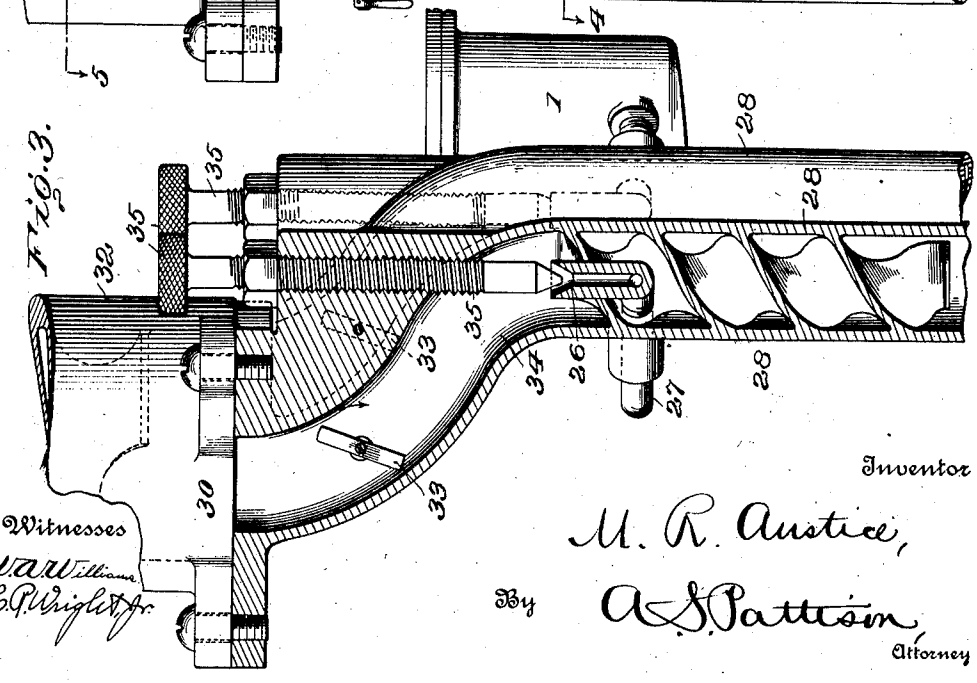


Fig. 3.



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3 SHEETS—SHEET 3.

Fig. 4.

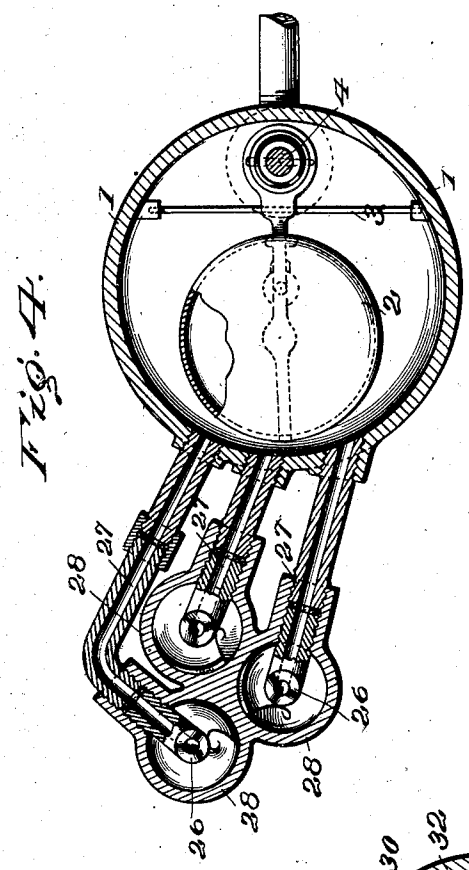
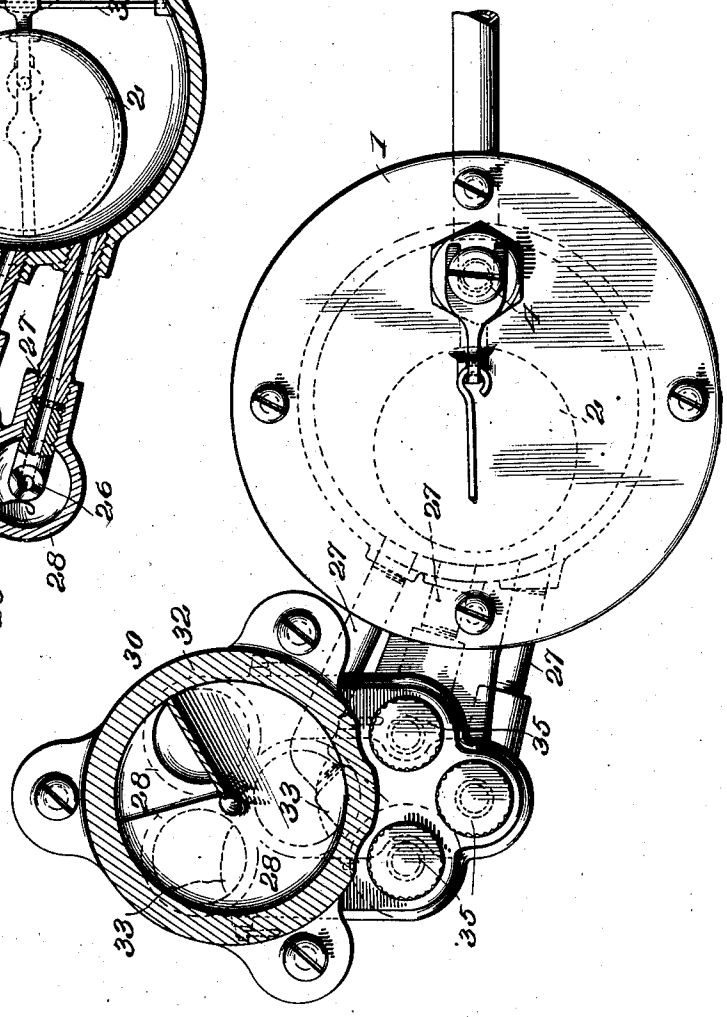


Fig. 5.



Witnesses

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UNITED STATES PATENT OFFICE.

MORTIMER REYNOLDS ANSTICE, OF ROCHESTER, NEW YORK.

CARBURETER.

1,038,262. Specification of Letters Patent. Patented Sept. 10, 1912.

Application filed January 9, 1911. Serial No. 601,749.

To all whom it may concern:

Be it known that I, MORTIMER R. ANSTICE, a citizen of the United States, residing at Rochester, in the county of Monroe and State of New York, 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 for use in connection with explosive engines of all types.

The primary object of my invention is to secure a thorough vaporization of the gasolene drawn from the jet or outlet opening in the mixing chamber by forcibly and violently throwing the particles of gasolene against the walls of the mixing chamber, and thus thoroughly breaking up all of the gasolene particles and causing their thorough vaporization and thorough mixture with the air, and as a consequence, practically a perfect gasolene mixture is obtained when it enters the engine cylinders.

In carbureters where the gasolene particles are drawn through the mixing chamber in a direction longitudinally of the walls of the mixing chambers, there remain in the mixture shall particles of gasolene somewhat in the nature of a spray, and these are drawn into the engine cylinder and to that extent a thorough vaporization is not obtained and a perfect mixture is not obtained with a consequent deterioration in the working efficiency of the mixture when ignited.

In carrying out my present improvement, I provide means for imparting to the incoming air a strong or violent whirling motion within the mixing chamber as it passes the gasolene jet or outlet opening, whereby the gasolene particles which are sucked or drawn from the said jet or outlet opening are thrown in violent contact with the wall of the mixing chamber and thoroughly broken up which will cause a more thorough vaporization of the gasolene particles.

Another feature of my present improvement is to provide means in the manifold between the jet or gasolene outlet and the intake valve of the motor for imparting to the mixture a violent whirling motion which also violently throws against the walls of the manifold any particles of gasolene which were not broken or dissipated in the mixing chamber, thus continuing this whirling motion sufficiently to accomplish a thorough vaporization of the gasolene and a perfect mixture when it enters the engine cylinders.

Another feature of the present invention is to subject the mixture when it leaves the mixing chamber and enters the manifold to a violent whirling motion in a direction opposite the whirling motion in the mixing chamber, which will further tend to more violently throw the unbroken particles against the wall of the manifold, thus more thoroughly vaporizing the gasolene.

Another feature of my present invention is to provide means in the manifold for successively whirling the mixture in opposite directions as it passes through the manifold, which reverses the whirling direction of the mixture several times as it passes through the manifold.

This invention is capable of use with either a single jet carbureter, or with a plurality jet carbureter.

In the accompanying drawing—Figure 1 is a sectional view showing my invention applied to a single jet carbureter. Fig. 2 is a sectional view of a plurality jet carbureter with my improvement applied thereto, the section being shown longitudinally through the float chamber and one of the gasolene jet or outlet conduits. Fig. 3 is a sectional view of Fig. 2 taken at right angles to Fig. 2. Fig. 4 is a horizontal sectional view on the line 4—4 of Fig. 2. Fig. 5 is a horizontal sectional view on the line 5—5 of Fig. 2.

My present invention may be carried out or used in connection with any form of carbureter, in which the gasolene is drawn into the mixing chamber through an outlet. I have here shown it in connection with the ordinary jet type of carbureter and with the ordinary type of float chamber for maintaining the gasolene at a predetermined level in the jet conduit or outlet opening.

Referring now to the drawings, 1 indicates the ordinary form of float chamber in which is located a float 2, pivoted at the point 3 and operating a valve 4, which controls the gasolene inlet 5 from a source of supply. A full detail description of this construction is well-known and understood to those skilled in this art and it is sufficient to say that when the gasolene reaches the predetermined level in the chamber 1,

the float lifts and the valve 4 is seated, thus closing the inlet opening 5. When the level is lowered the float 2 falls with it and lifts the valve 4 from its seat permitting the gasolene to flow in the chamber 1 until the predetermined level is again reached, when the valve is again closed.

Fig. 1 shows my invention as applied to a single jet carbureter in which 6 is the inlet pipe, 7′, 8 and 9 the manifold. While I have shown only two branches 8 and 9 in the manifold, I desire it understood that the number of branches may vary according to the condition to be met. For the purpose of simplicity and illustration and description, I here show two branches for the manifold. Located in the part 7′ of the manifold is a throttle 10 of any desired form, the operation of which is understood by those skilled in the art and a description is unnecessary. In the single jet type of carbureter, it is usual to provide an auxiliary air-passage communicating with the mixing chamber. The auxiliary air-passage or opening is of the form shown at 11, and it is provided with the well-known spring actuated valve 12, for controlling the air-opening or inlet to the passage 11. This forms no part of the present invention and is also well understood. One part of my improvements consists in providing means in the air-passage 6, for imparting to the incoming air a violent whirling motion before it reaches the gasolene jet or outlet opening, which communicates with the mixing chamber 15. As here shown, the means of imparting the whirling motion consists in providing a helicoidal wall 16 in the passage 6, which provides a helicoidal channel 7. This helicoidal channel will be of the proper area in proportion to the requirements of the carbureter and the engine with which it is used. This helicoidal channel imparts to the incoming air a violent whirling motion as it passes the gasolene jet or outlet opening 14, and as a consequence the gasolene which is passing from the jet-opening in the form of a very fine spray has its particles violently thrown against the wall of the mixing chamber which breaks up the gasolene particles and causes a more thorough vaporization of the gasolene and, as a consequence, closer approaches the production of a perfect mixture to be received by the engine cylinder. This part of my improvement is capable of producing very marked results in effecting a more perfect mixture if fed to the cylinders without any further whirling motion being imparted thereto. However, I carry my improvement further and provide means in the manifold for imparting whirling motion to the mixture to continue the violent throwing of any remaining particles of gasolene against the wall of the manifold, and thus breaking up and causing thorough vaporization thereof. The means here shown consists in providing the stem portion 7′ with a helicoidal wall 17, which forms a helicoidal channel 18, and this helicoidal channel acts to impart a whirling motion to the mixture as it passes therethrough. The throttle 10 interrupts the whirling motion of the passing mixture very materially and will cause it to pass from the mixing chamber to the stem 7′ in almost a straight line. By reason of this, the direction of the helicoid 17 as compared to the direction of the helicoid 16 is not very material. My improvement is carried further by providing in the branches of the manifold means for imparting to the mixture a whirling motion for the purposes already described. Preferably the branches 8 and 9 are provided with means for successively reversing the helicoidal direction of the passing mixture. As here shown, this means for reversing the whirling direction of the mixture consists of helicoidal walls 19, 20, 21, 22, 23 and 24. These helicoidal walls impart to the passing mixture whirling motions in successive reverse directions.

By reason of the construction hereinbefore described, I am enabled to accomplish a thorough dispersion and breaking up of all of the particles of the gasolene contained in the mixture and to accomplish a thorough vaporization thereof with a perfect mixture entering the engine cylinder with a consequent increase in efficiency when ignited in the engine cylinders.

In Figs. 2, 3, 4 and 5, I show my invention applied to multiple jet carbureters. In this instance, three gasolene jet openings 26 are provided, and these are separately connected with the float chamber 1 by means of conduits 27. There is a separate air inlet 28 for each of these jet orifices, and each inlet 28 is provided with a helicoidal channel 29 similar to that shown in Fig. 1. All three of these inlet passages 28 communicate at their outlet ends 30 and are common to the inlet end 31 of the manifold 32. The manifold in this instance, may be provided with helicoidal walls and channels like that shown in Fig. 1, and the branch passages (not shown) of the manifold will also be provided with the helicoidal channels like that shown in Fig. 1, where the carbureter is used in communication with a multiple cylinder engine. The operation of this multiple jet carbureter is identically the same as the operation of the single carbureter so far as the action on the particles of gasolene is concerned. A throttle 33 is provided for the mixing chamber 34 of each of the jet carbureters. There is provided a needle valve 35 for each of the jet orifices by means of which the flow of gasolene therethrough is controlled in the usual manner.

Having thus described my invention, what I claim and desire to secure by Letters Patent is:

1. A carbureter comprising a mixing chamber, a gasolene outlet therein, the mixing chamber having an air inlet, a manifold communicating with the outlet of the mixing chamber, the air inlet having stationary means for imparting to the incoming air a whirling motion, and the manifold having stationary means for imparting to the passing mixture a whirling motion in a direction opposite the whirling motion imparted to the air inlet.

2. A carbureter comprising a mixing chamber, a gasolene outlet therein, the mixing chamber having an air inlet and mixture outlet, a manifold in communication with the mixture outlet, the manifold having stationary means for imparting to the passing mixture whirling motions in successive opposite directions.

3. A carbureter comprising a mixing chamber, a gasolene outlet therein, the missing chamber having an air inlet and a mixture outlet, a manifold connected with the mixture outlet, the air inlet having a stationary helicoidal passage in one direction and the manifold having stationary helicoidal flanges arranged in successive reverse directions.

4. A carbureter comprising a mixing chamber, a gasolene outlet in said chamber and located between the ends of said chamber, said chamber having an air inlet at one side of the gasolene outlet and a mixture outlet at the opposite side of the gasolene outlet, stationary helicoidal flanges at the inlet of the said chamber, and oppositely arranged stationary helicoidal flanges at the outlet of said chamber, whereby the incoming air and the outgoing mixture are given whirling motions in opposite directions at opposite sides of said gasolene outlet.

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

MORTIMER REYNOLDS ANSTICE.

Witnesses:
J. MOREAN SMITH,
R. C. WATSON.