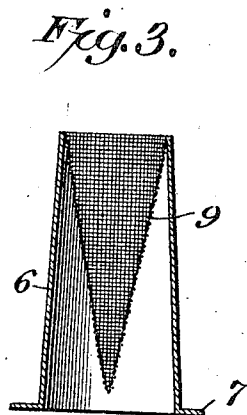
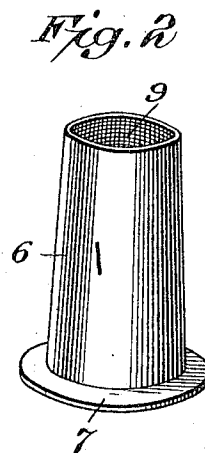
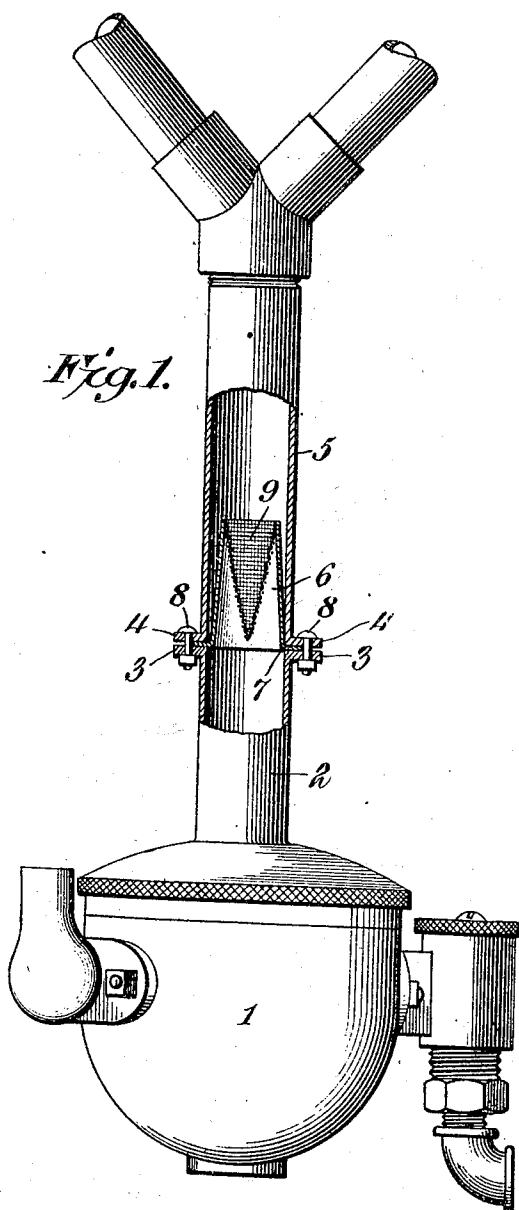


J. I. CHAMBERS.
MIXER.
APPLICATION FILED MAR. 25, 1911.

1,011,030.

Patented Dec. 5, 1911.



WITNESSES

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JOB IRA CHAMBERS, OF EDDY, OKLAHOMA.

MIXER.

1,011,030.

Specification of Letters Patent.

Patented Dec. 5, 1911.

Application filed March 25, 1911. Serial No. 616,942.

To all whom it may concern:

Be it known that I, JOB IRA CHAMBERS, a citizen of the United States, residing at Eddy, in the county of Kay and State of Oklahoma, have invented a new and useful Mixer, of which the following is a specification.

This invention has reference to improvements in mixers to be introduced in the conduit leading from a carbureter to an explosion engine or engines, and its object is to cause the thorough incorporation of a hydro-carbon fluid with the air it enriches after the hydro-carbon has been mixed with the air in the carbureter.

In the device wherein a liquid hydro-carbon, such as gasolene, is intermixed with air, and which device is commonly known as a carbureter, it frequently transpires that the intermixture is not complete and the liquid hydro-carbon is not always thoroughly volatilized, so that there is a wastage of the fuel, of which gasolene may be taken as typical, due to the imperfect mixture.

The present invention comprises a screen of fine mesh gauze of substantially conical form with the apex of the cone directed toward the carbureter and the base of the cone away from the carbureter, and this device which is designed to provide a homogeneous mixture of the hydro-carbon and the air is placed in the manifold leading to the engine or engines, which mixer may be constructed in sizes to fit in intake manifolds.

The invention will be best understood from a consideration of the following detailed description taken in connection with the accompanying drawings forming a part of this specification, with the understanding, however, that while the structure shown in the drawings is a practical form of the invention it may assume other forms without departing from the salient features of the invention.

In the drawings:—Figure 1 is an elevation with parts in section showing a carbureter and a manifold with the invention applied. Fig. 2 is a perspective view of the device forming the subject matter of the present invention. Fig. 3 is a longitudinal diametric section of the structure shown in Fig. 2.

Referring to the drawings, there is shown a carbureter 1, which may be taken as typical of any suitable carbureter for the struc-

ture of the carbureter is not material to the present invention. From this carbureter there leads a pipe 2 terminating in a flange 3 matching a like flange 4 on the corresponding end of a manifold 5, such as is commonly employed for conducting the charge to the engine or engines, but the particular structure of the several parts already described is not material to the present invention and may follow the usual practice.

The hydro-carbon most commonly employed in producing the admixture with air to form the explosive charges for the engine is gasolene, and such gasolene is usually sprayed into an air stream and the mixture is ultimately carried to the explosion chamber of the engine. For best results the liquid gasolene should be entirely volatilized and absorbed by the air, so that the air may become enriched to the requisite degree, and the admixture should be very intimate.

It is the purpose of the present invention to cause the thorough incorporation of the hydro-carbon with the air and for this purpose there is provided a thimble 6 preferably of frusto-conical form with a radial flange 7 at the base end, the diameter of such base end being such that the flange 7 may be introduced between the flanges 3 and 4 to be clamped thereto by bolts 8 usually employed to couple the conduit 2 to the manifold 5, these bolts traversing the flanges 3 and 4, while the radial extent of the flange 7 may be such as to not interfere with the bolts 8, but at the same time form a sufficiently tight connection to prevent leakage.

Secured to the small end of the thimble 6 is a gauze cone 9, the apex of which is presented toward the base end of the thimble 6, while the base end of the cone 9 is united at its edges to the smaller end of the thimble 6, this union being brought about by soldering or otherwise. For best results the walls of the cone 9 should have an angle of about thirty-five degrees, although small variations from this angle will not prevent satisfactory operation of the device.

The stream of air and gasolene vapor coming from the carbureter 1 must pass through the gauze cone 9, the apex of which is presented to such oncoming stream so that the latter will pass along the outer surface of the cone 9 from the apex toward the base thereof and will find its way into

the interior of the cone, and so into the manifold 5 through the multitude of interstices between the interlaced strands forming the cone 9. By this means the oncoming stream meets a constantly increasing surface of gauze and the stream is subdivided into a multitude of fine streams in the passage through the gauze, the presentation of the apex of the gauze cone toward the oncoming stream greatly facilitating the action and rendering it much more certain and efficient than would be the case were the oncoming stream to pass first to the interior of the cone and through the same to the exterior thereof. The action of the gauze cone 9 is to cause a most thorough intermixture which in practice has been found to be far more intimate than when the cone is omitted, and, furthermore, the cone causes a change in the direction of travel of the stream of air and hydro-carbon fluid whence such stream is highly subdivided, so that these minute streams are brought into interfering relation one to the other in such manner that any portions of the stream where the air and hydro-carbon fluid are not thoroughly intermixed become thoroughly intermixed. The taper form of the thimble also contributes to the efficient action of the gauze cone by bringing the stream more rapidly into engagement with the walls of the cone than would be the case were the thimble cylindrical or of expanding form.

It is essential for the best results that the intermixture of the hydro-carbon fluid with the air should be homogeneous, but this does not occur with carbureters as usually employed in connection with explosion engines, but with the present invention this is brought about by the sub-dividing and direction changing action of the gauze upon the oncoming fluid stream, whereby the mixture is made more thorough than otherwise by the intermingling of the many fine streams, so that separate streams of air or gasoline vapor, as the case may be, are broken up and caused to intermingle instead of maintaining such separate relation until

the explosion chamber of the engine is reached.

Actual experience has demonstrated that from eighteen to twenty-three per cent. of the gasoline before required is saved because of the improved mixture, the efficiency of the charge being thereby so increased that less fuel is required for the development of the necessary power than is the case where the incorporation of the gasoline in the air stream is less thorough and the approach to a homogeneous mixture less pronounced.

The thimble with the gauze sleeve is readily introducible into the manifold where joined by the conduit coming from the carbureter irrespective of the type of carbureter. Because of the thorough intermixture produced the amount of fuel necessary to develop a certain power is reduced, excessive heating of the engine is prevented and because of the homogeneous character of the mixture the deposition of carbon in the firing or explosion chamber is prevented and spark-plug troubles are correspondingly reduced.

What is claimed is:—

An auxiliary mixing device for carbureters for introduction in the charge conveying conduit leading from the carbureter to the point of utilization, comprising an open ended thimble of frusto-conical form with a radial flange at the larger end for securing the thimble in the conduit, and a gauze cone secured at its large or basic end to the smaller end of the thimble and, having its apex directed toward the larger end of the thimble, the apex end of the gauze cone being directed toward the carbureter when the device is installed in the charge conveying conduit.

In testimony, that I claim the foregoing as my own, I have hereto affixed my signature in the presence of two witnesses.

JOB IRA CHAMBERS.

Witnesses:

J. P. JONES.

LOUIS C. BULL.