

W. W. BERGOLD.
MIXER FOR GASEOUS FUEL.
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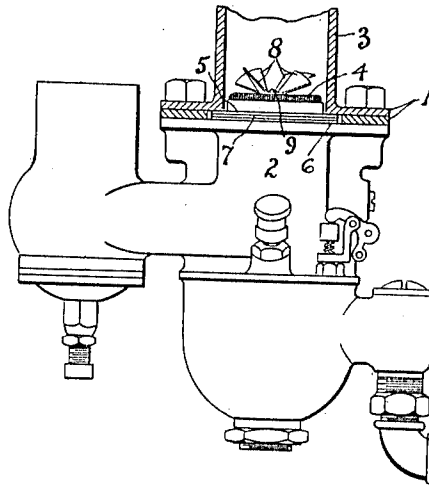


Fig. 1

Fig. 2

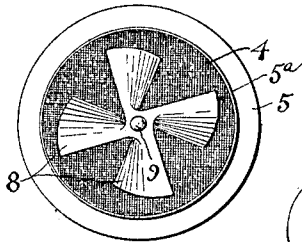


Fig. 3

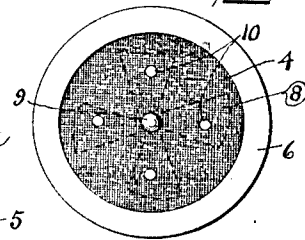


Fig. 4

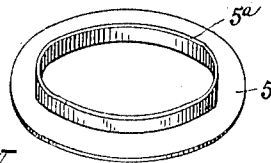


Fig. 5

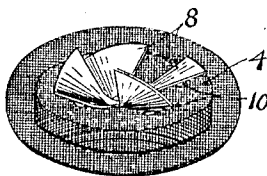


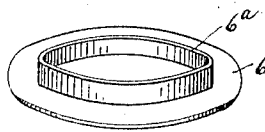
Fig. 6



Witnesses:

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Fig. 7



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UNITED STATES PATENT OFFICE.

WILBUR W. BERGOLD, OF CANTON, OHIO, ASSIGNOR OF ONE-HALF TO J. M. BERGOLD,
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MIXER FOR GASEOUS FUEL.

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Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, WILBUR W. BERGOLD, a citizen of the United States, residing at Canton, in the county of Stark and State of Ohio, have invented certain new and useful Improvements in Mixers for Gaseous Fuel, of which the following is a specification.

My invention relates to improvements in mixers for carbureters, and is particularly designed and adapted for use in connection with an ordinary carbureter at some convenient place between it and the intake manifold of the engine for diffusing the gasolene spray or vapor as received from the spray nozzle and provide a perfect mixture, evenly blended and of the proper consistency.

Gasolene, as it is sucked out of the nozzle, made up as it is, of hydrocarbons of differing values, from the point of view of weight and volatility will hold to the globular form with more or less tenacity, depending upon conditions. In any one carbureter the perfection of vaporization is proportioned to the fineness with which the liquid is broken up at the nozzle. The shortness of the time within which vaporization must be completed is what causes the above factor of fineness of division to enter. Since the heat transfer between the air and the liquid, or the passage walls and the liquid is effected chiefly through the agencies of convection and conduction—the former implying a rapid agitation and relative motion between the particles of the two substances, and the latter the exposure by the liquid of the greatest possible surface areas—it is readily seen that the finer the fuel division at the nozzle the more rapid and complete will be the vaporization and the greater the homogeneity of the final mixture.

Those who have constructed transparent carbureting chambers for the observance of nozzle action have ascertained that the fuel left the nozzles as a solid stream or in heavy globules and irregular "chunks", not as a fine spray or mist, as it is supposed to do.

At low speeds the mixture should be richer than at high. This is due to the fact that at low speeds more heat is lost to the cylinder walls, more compression is lost by leakage, and the combustion can therefore be slower, thus sustaining the pressure. At high speeds the compression is higher, due to less leakage and less loss of heat. There-

fore, unless the mixture be leaner at high speed there might be danger of pre-ignition. A lean and highly compressed charge also burns faster and hence gives better pressures and fuel economy than a richer one.

To get the maximum power out of a given sized engine the fuel should be introduced into the cylinder as cold as possible consistent with complete evaporation, intimacy of mixture and completeness of combustion.

It is the purpose of this mixer to provide for such complete evaporation and homogeneous diffusion of the combustible charge under the varying demands of actual service, as above pointed out, by the provision of means for evaporating and diffusing the gasolene spray as received from the spray nozzle so that a perfect gas mixture of even density at all speeds will be provided and delivered at the cylinders.

With the above mentioned and other objects in view, the invention consists in the novel construction, arrangement, and combination of parts, hereinafter described, illustrated in one of its embodiments in the accompanying drawings and particularly pointed out in the appended claims.

Referring to the drawings forming a part of this specification, Figure 1, is a side elevation of the improved mixer as it appears applied for use in connection with an ordinary carbureter of the Schebler type. Fig. 2, an enlarged top plan view of the same detached. Fig. 3, a bottom plan view of the same. Fig. 4, an isometric view of the upper rim member for cooperating with the lower rim member in securing the gasket and gauze members in position. Fig. 5, a similar view of the foraminous or gauze intercepting member and the stationary deflecting blades carried above the latter. Fig. 6, a similar view showing the gasket member adapted to be interposed between the rim portion of the foraminous intercepting member and the lower rim member. Fig. 7, a similar view of the lower rim member.

Similar numerals of reference designate like parts throughout all the figures of the drawings.

The improved mixer is adapted to intercept the combustible charge as received from the carbureter which may be of any suitable and convenient type and may be conveniently located between and secured by the flange members 1, of the carbureter body

2, and the charge intake pipe 3, leading to the respective engine cylinders.

The improved mixer comprises a foraminous intercepting member 4, preferably of wire gauze of disk-shape and provided with an offset rim portion, as shown.

As a convenient means for securing and supporting the intercepting member as well as providing a rim portion adapted to be interposed and secured between the flange members 1, as shown in Fig. 1, and explained above, upper and lower rim members 5 and 6, are provided, together with an asbestos washer or gasket member 7, said lower rim member 6, being provided about its inner periphery with an upwardly extending flange 6^a, adapted to rest within the gasket member 7, and within the offset rim portion of the gauze intercepting member, and the upper rim member 5, is likewise provided with an angularly shaped flange 5^a, adapted to fit down upon and secure the rim portion of the gauze disk or intercepting member 4, upon the gasket 7, and about the flange 6^a of the lower member 6.

As a means for intercepting and thoroughly mixing and commingling the irregular combustible charges of gasolene and air as received from the carbureter as well as giving the same a gyratory motion after passing through the gauze disk or intercepting member 4, a plurality of stationary deflecting blades 8, are arranged above and secured to the central portion of the gauze intercepting member 4, in any suitable and convenient manner, as for example,—a securing rivet 9, said deflecting blades being inclined upwardly and laterally in a similar relation to each other as shown most clearly in Figs. 1 and 5 of the drawings.

As a means for the more ready passage of the combustible charge through the intercepting member 4, directly beneath the deflecting blades 8, and more particularly as a means for the more ready passage of the combustible charge and heavier globules of gasolene at low speed and low suction when the mixture should be richer than at high speed and yet thoroughly commingled as above explained, a plurality or series of openings 10, are provided in the intercepting member 4, immediately below the deflecting blades 8, so that streams passing through the openings 4, will strike against the inclined deflecting blades 8, and be deflected and given a gyratory motion by mechanical agitation thereby evaporating the gasolene and perfectly carbureting the air into an absolutely homogeneous combustible charge resulting in economy of consumption of the liquid hydrocarbon and

maximum power at any given speed in accordance with the immediate conditions of combustion.

It is believed that the above construction offers a great advantage over that in which rotary fan wheels or blades are provided as mixers and in which the blades simply get out of the way of the passing mixture instead of evaporating and diffusing the gasolene spray into a homogeneous combustible charge. Furthermore, such mixers are not provided with means for taking care of the varying demands of actual service as at high and low speed, as above explained.

From the foregoing description, taken in connection with the accompanying drawings, the operation and advantages of my invention will be readily understood.

Having thus described one of the embodiments of my invention, what I claim and desire to secure by Letters Patent is,—

1. A mixer for carbureters, comprising a gauze intercepting disk provided with an offset rim portion, flanged rim members mounted above and below said offset rim portion of said gauze intercepting disk, and upwardly and laterally inclined stationary deflecting blades secured above said intercepting disk.

2. A mixer for carbureters, comprising a gauze intercepting disk provided with stationary deflecting blades and having an offset rim portion, a rim and gasket member mounted beneath said rim portion, and a flanged rim member mounted above said gauze intercepting disk.

3. A mixer for carbureters, comprising a gauze intercepting member provided with openings, and stationary deflecting blades carried by said intercepting member and extending above said openings.

4. A mixer for carbureters, comprising a gauze intercepting disk provided with a plurality of openings, and a plurality of inclined stationary blades secured above said disk and extending above said openings.

5. A mixer for carbureters, comprising a gauze intercepting disk having a plurality of openings and provided with a gasket adapted to be inserted in the outlet portion of the carbureter, and similarly inclined radially extending stationary deflector blades secured above said openings and carried by said disk.

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

WILBUR W. BERGOLD.

Witnesses:

J. M. BERGOLD,
PEARL THOMPSON.