Nov. 11, 1924. 1,515,280

C. S. SAUNDERS ET AL

CHARGE MIXING DEVICE FOR INTERNAL COMBUSTION ENGINES

Filed April 29, 1924

Fig. 1.

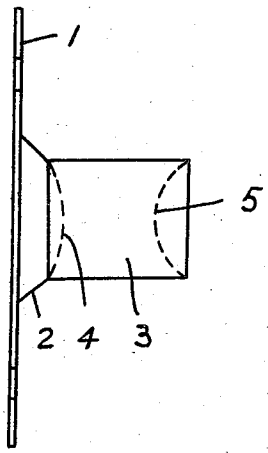
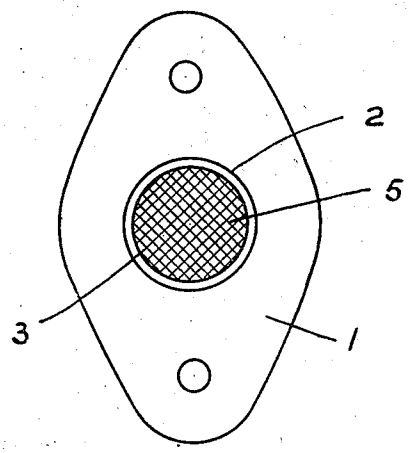



Fig. 2.




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# UNITED STATES PATENT OFFICE.

CYRIL SIVEWRIGHT SAUNDERS AND WILFRED PERCIVAL CRAUFURD-LINDSAY, OF ARRAH, BRITISH INDIA.

## CHARGE-MIXING DEVICE FOR INTERNAL-COMBUSTION ENGINES.

Application filed April 29, 1924. Serial No. 709,876.

*To all whom it may concern:*

Be it known that we, CYRIL SIVEWRIGHT SAUNDERS and WILFRED PERCIVAL CRAUFURD-LINDSAY, both of Arrah, British India, subjects of His Majesty King George V, have invented certain new and useful Improvements in Charge-Mixing Devices for Internal-Combustion Engines, of which the following is a specification.

This invention relates to charge mixing devices for internal combustion engines, and has for its object to provide a device which is adapted easily to be placed in position between the carburetter and the induction pipe of the engine, and which is more efficient than devices hitherto proposed.

It has already been suggested to provide an auxiliary atomizer for insertion in the inlet port of the valve chamber of an internal combustion engine comprising a metal cylinder adapted to be inserted in and forming a tight fit with the internal periphery of the said inlet port, the metal cylinder containing a series of preferably dome shaped gauze screens of fine mesh, such screens being threaded, preferably at equal distances, on a longitudinally arranged metal rod.

It has also been proposed to provide between the carburetter and the induction pipe, a series of wire gauze washers, to prevent back firing from the combustion chamber into the carburetter.

It has also been proposed to provide a relatively thin flat body or chamber shaped to fit between the confronting flanges of the manifold and the carburetter, the said chamber being furnished with a gauze through which the mixture passes and with openings around the edges to accommodate bolts extending between the flanges of the manifold and the carburetter, in order to hold the device in position.

The device constructed according to our invention comprises a tube carried by a plate or its equivalent and adapted to be mounted between the carburetter and the induction pipe of the engine and to project into but not to fit tightly within the latter.

Gauze screens are provided at each end of the tube or tubes and these screens are preferably formed concavo-convex.

In order that the invention may be more readily understood, it will now be described with reference to the accompanying drawing, in which:—

Fig. 1 is a side elevation and Fig. 2 and end view of a charge mixing device or fitting constructed according to the invention.

The fitment to be placed in the induction pipe leading from the carburetter to the engine comprises a flange 1 having holes therein through which pass the bolts attaching the carburetter to the induction pipe. To this flange is attached by means of a frusto-conical collar 2 a tube 3; the collar being attached at its larger end to the flange and at its smaller end to the tubes, as shown. At each end of this tube is a gauze screen or diaphragm, 4 being that at the carburetter end and 5 that at the other end. The tube 3 is arranged to fit into the induction pipe. The screens or diaphragms are shown made concavo-convex with the convexities turned towards one another, but one or the other of them may be arranged with its convex face directed outwards.

The two screens or diaphragms may be fitted in the tube in any desired manner. With the foregoing construction, owing to the fact that the metal tube 3 is in sectional area than the inner periphery of the inlet pipe, the velocity of the mixture of petrol vapour or other spirit and air is increased as received from the carburetter. It is slightly compressed or concentrated on entering the tube, due to the use of the frusto-conical connecting collar 2, and then slightly expands on passing out of the same. This causes a more complete inter-mixture of the said petrol vapour or other spirit and air. Moreover, owing to the arrangement of the gauze screens, the mixing is effected in a more satisfactory manner by breaking up the mass of petrol vapour or other spirit and air into a series of small stream on entering the tube and also on leaving the same when passing into the induction pipe.

Having now particularly described and ascertained the nature of our said invention and in what manner the same is to be performed, we declare that what we claim is:—

A charge-mixing device for internal combustion engines, comprising an attaching

flange, an imperforate frusto-conical collar secured thereto at its edge of larger diameter, an imperforate cylindrical metal tube secured at its inlet end to the edge of smaller diameter of said collar, said tube adapted to project freely into the induction pipe of the engine, and a pair of concavo-convex gauze screens mounted in the tube adjacent the opposite ends thereof; said collar, owing to its frusto-conical formation, serving to compress the gaseous charge slightly as it enters the tube.

In testimony whereof we hereto affix our signatures in the presence of two witnesses, this second day of April, 1924.

CYRIL SIVEWRIGHT SAUNDERS.

WILFRED PERCIVAL CRAUFURD LINDSEY.

Witnesses:

BIMAL ORMOR BAULJEE,

PREMCHAUD.