F. G. CRONE.

MIXING UNIT FOR FLUIDS.

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1,095,555.

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Fig. 1.

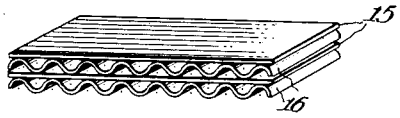


Fig. 2.

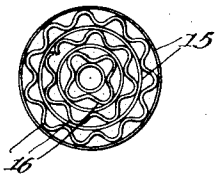


Fig. 3.

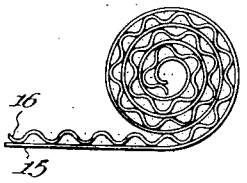
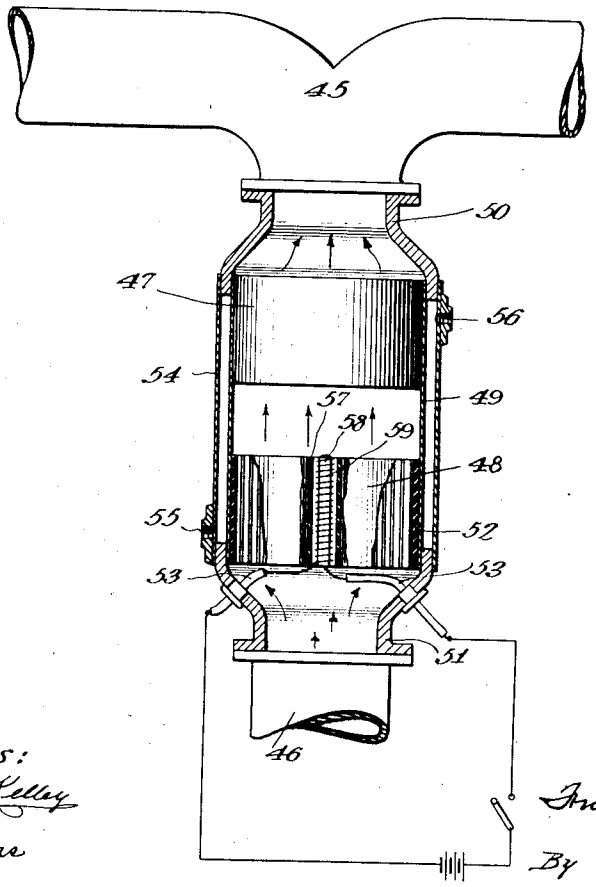


Fig. 4.



Witnesses:

Walter H. Kelley

Clara Bowers

Inventor:

Francis G. Crone

By J. W. McEllis

Attorney.

UNITED STATES PATENT OFFICE.

FRANCIS G. CRONE, OF BUFFALO, NEW YORK.

MIXING UNIT FOR FLUIDS.

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To all whom it may concern:

Be it known that I, FRANCIS G. CRONE, a citizen of the United States of America, and a resident of the city of Buffalo, county of Erie, and State of New York, have invented certain new and useful Improvements in Mixing Units for Fluids, of which the following is a full, clear, and exact description.

My invention relates generally to mixing units and has for its object to provide a unit which, when used in connection with the cylinder, intake port or manifold of a hydro-carbon engine will substantially prevent back-firing.

Another object has been to provide a device which may be used in connection with the manifold pipe, intake port or cylinder of a hyro-carbon engine to improve the fuel mixture and to decrease the amount of fuel consumption, and also one which may be connected with a suitable source of electric current and thus be heated, thereby making it possible to easily start the engine.

My invention comprises a plurality of members so arranged as to provide a plurality of longitudinal passage ways, thus forming a mixing unit.

Reference is to be had to the accompanying drawings, forming part of this specification, in which like characters of reference indicate like parts throughout the several views of which:

Figure 1 is a perspective view of a rectangularly shaped unit which is made of flat and corrugated sheets of material. Fig. 2 is a plan view of a cylindrically shaped unit which is formed from flat and corrugated sheets of material. Fig. 3 is a plan view with a partly finished circularly shaped unit which is formed of a flat and corrugated sheet of material, rolled in the form of a spiral. Fig. 4 shows two of my circularly shaped units arranged for use in the path of travel of the fuel mixer between the carbureter and the intake manifold, and also shows one of the units insulated from the casing and provided with a suitable electric heating means to further accelerate the vaporization of the fuel in cold weather.

My units are each made of a plurality of flat sheets 15 and a plurality of corrugated sheets 16, preferably formed of sheet metal of any suitable material. These sheets are alternately arranged and disposed one upon the other. The form of device shown in Fig. 1 is for use in chambers of square or rectangular shape. In Fig. 2 the sheets of material forming the unit are wrapped about one another in concentric rings and is for use in circular shaped chambers. In Fig. 3 the unit is formed of a single sheet of flat material 15 and a single sheet of corrugated material 16, which are rolled together in the form of a spiral. This construction makes it possible to form a unit of any diameter from only two sheets of material, and thus provides a very convenient method of manufacture.

In Fig. 4, I have shown one of the many adaptations of my unit. In this figure I show its use in connection with the manifold or intake pipe of a hydro-carbon engine. In this figure, 45 represents a fragmental portion of an intake manifold, and 46 a fragmental portion of the pipe leading from the carbureter to the said intake manifold.

47 and 48 represent two of my vaporizing units which are preferably disposed within a casing 49. This casing is preferably provided with heads 50 and 51 which are secured to the manifold intake pipe 45 and pipe 46 respectively. As the fuel mixture passes from the carbureter to the intake manifold it is obliged to pass through a plurality of longitudinal passage ways provided by my unit, and in this passage it is more thoroughly mixed and atomized, thus making a richer mixture and also economizing on the fuel used.

In Fig. 4 I show one of my units arranged to be heated by a current of electricity. In this figure, I have shown the unit 48 insulated from the casing 49 by a strip of insulating material 52. A strip of insulating material 57 is also arranged through the center of this unit and has centrally disposed therein an insulated core 58, around which is wound a coil of resistance wire 59. Connected with the opposite ends of this coil are electrical terminals 53, which pass through suitable insulating bushings in the casing and are connected with a suitable source of electric current. When an electric current is allowed to pass through the coil of wire 59, the unit is thereby heated and as the vapor from the carbureter comes in contact therewith, it is also heated and more

completely vaporized, so that when it reaches the engine cylinder, it is more readily ignited and thereby the engine is more easily started. If desired, each of the units may be insulated and provided with electrical heating coils.

The casing 49 may be provided with a jacket 54 which is provided with an inlet and outlet port 55 and 56, respectively. This jacket may be supplied with hot exhaust gases, hot water or hot air and thus raise the temperature of the units and accomplish the same results as the electric heating means.

Obviously, if desired, one or more vaporizing units may be placed within the intake manifold, the intake ports or the cylinders of a hydro-carbon engine instead of being placed within a separate casing, as shown in Fig. 4, when so arranged, the same results are accomplished as with the form shown and in addition the engine is prevented from back-firing.

Having thus described my invention, it will be seen that my device accomplishes the results pointed out in the objects hereinbefore enumerated.

Obviously, some modifications of the details herein shown and described may be made without departing from the spirit of my invention or the scope of the appended claims and I do not wish to be limited to the exact embodiment herein shown and described.

Having thus described my invention, what I claim is:

1. A mixing unit having a plurality of corrugated sheets of material, a plurality of smooth sheets of material, said smooth sheets being in contact with said corrugated sheets and alternately disposed therewith and electrical means for heating said unit.

2. A mixing unit having a plurality of corrugated sheets of material, a plurality of smooth sheets of material, said smooth sheets being in contact with said corrugated sheets and alternately disposed therewith, an insulated core in proximity to said unit and a coil of resistance wire supported by said core, whereby the unit will be heated and vaporization accelerated.

3. A mixing unit having a plurality of corrugated sheets of material, a plurality of smooth sheets of material, said smooth sheets being in contact with said corrugated sheets and alternately disposed therewith, an insulated core disposed within said unit and a coil of resistance wire supported by said core, whereby the unit will be heated and vaporization accelerated.

In testimony whereof, I have hereunto signed my name in the presence of two subscribing witnesses.

FRANCIS G. CRONE.

Witnesses:
BESSIE E. DEMPSEY,
WALTER H. KELLEY.