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GAS MIXING DEVICE FOR COMBUSTION ENGINES

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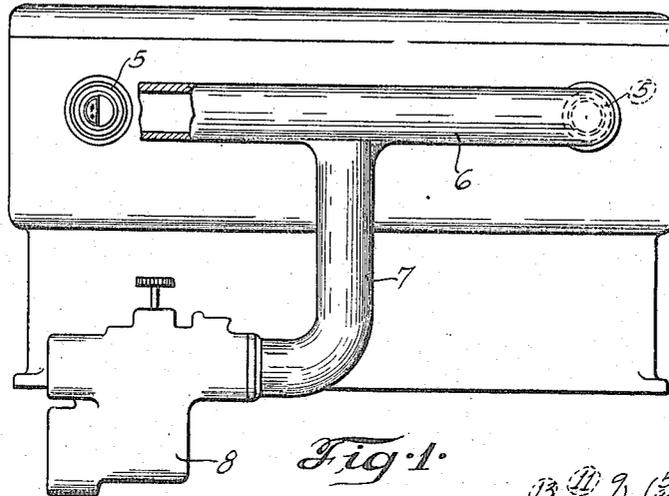


Fig. 1.

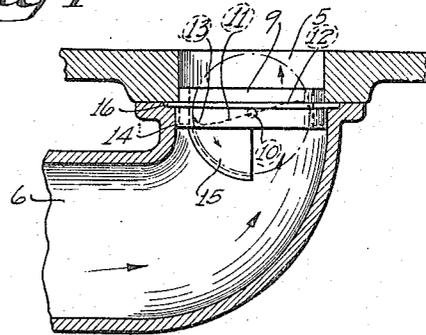


Fig. 2.

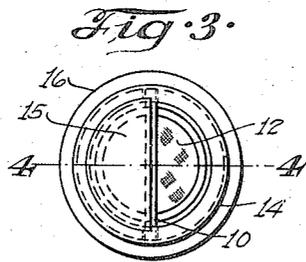


Fig. 3.

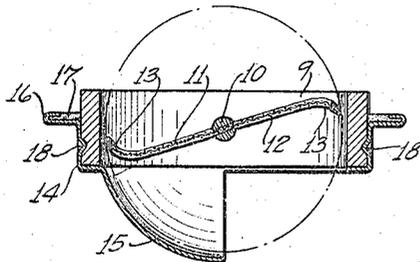


Fig. 4.

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# UNITED STATES PATENT OFFICE.

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GAS-MIXING DEVICE FOR COMBUSTION ENGINES.

Application filed February 7, 1923. Serial No. 617,519.

*To all whom it may concern:*

Be it known that we, WILLIAM F. KLEIN and WALTER A. THUM, citizens of the United States, residing at St. Louis, State of Missouri, have invented certain new and useful Improvements in a Gas-Mixing Device for Combustion Engines, of which the following is a specification.

Our invention relates to gas mixing devices for combustion engines and specifically to that class of mixing devices that are inserted into the intake ports of the cylinders between the intake manifold and the cylinder block, for the purpose of more thoroughly mixing the air and hydrocarbon vapor by creating a vortical movement of the inflowing charge at the point of ingress to the cylinder.

Another object of our invention is to construct a device wherein the actuating area will not be restricted in its operating functions by installing an instrument into its intake port, consisting of a paddle system eliminating the obstructions generally incumbent upon such devices provided with fan or stationary structures.

Another object of our invention is to improve upon the general construction of such devices to such an extent as to provide an implement which is of comparatively simple construction, extremely efficient and cheaply manufactured.

Various other objects and advantages of the invention will be brought out in the following specific description of the present preferred embodiment of this invention, the same being illustrated in the accompanying drawing, wherein;

Fig. 1 is a side elevation, partly broken away, showing the device in place; Fig. 2, a sectional view showing the inrush of gases in relation to the hood and vanes; Fig. 3, a front elevation of the device detached; and Fig. 4, a sectional view on line 4-4 of Fig. 3.

Referring to the drawing the numeral 5 indicates the intake ports of an internal combustion engine operatively connected with the by-pass 6 and the intake conduit 7, having a passage therethrough in communication with the carburetter 8. Detachably engaging the inner periphery of the intake ports 5 with its upper neck portion is a circular casing member 9, comprising an annular shell, having a fulcrum stud 10 arranged centrally within. Mounted upon said

stud 10 are a pair of spider arms 11 and 12 composed of fabricated and interlaced wire strips and helically bent at their marginal ends 13. Adjacent the inner peripheral side of the circular frame structure 9 is a skirt member 14 in embracing relation with said frame structure, terminating in an arched dome construction 15, about midway of the annular frame portion 9 and comprising an upstanding flange and a radially extending bracket 16. The margin of said bracket 16 is bent upon itself to form a loop engaging an interposed resilient gasket 17. To more firmly combine the jacket portion 14 to the annular frame portion 9 a series of strengthening indentations 18 are pressed against said members 9 and 14 to hold the same in rigid engagement.

Briefly stated the operation of our device is as follows;

The intake gases from the carburetter 8, passing through the conduit 7 and the by-pass 6 will strike either of the fabricated paddles 11 or 12, depending from their position when the motor is idling, forcing said paddles into a constant rotary speed. As the gases rush against the paddles 11 and 12 they will sweep the molecules or globules against the screen portions disintegrating the same into a homogeneous mixture when entering the area of the cylinders. The dome structure 15 by its structural formation will always keep one of the paddles, either 11 or 12 within its housing eliminating the inrush of gases to strike one pedal at its two faces at one and the same time and retard their revoluble movement simultaneously. The appliance has no adjustment or loose parts and can be operated automatically and the motor can operate at any desired rate of speed without interference.

From the above description it will be apparent, that there is thus produced a device of the character described possessing the particular features of advantage before enumerated as desirable but which obviously is susceptible of modification in its form, proportions and arrangement of parts without departing from the principle involved or sacrificing any of its advantages enumerated in the appended claims.

We claim:

1. A gas mixing device, in combination with an intake port for internal combustion engines, comprising an annular frame structure, a hood member component to said

- frame member, said frame member being adapted to be connected to an intake port in communication with a source of supply, movable operating parts adjacent the inner peripheral flange of said frame member and comprising a support connected to be revolved simultaneously with said movable operating parts, located in a plane at right angles to the common axis of rotation.
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- 10 2. A gas mixing device, in combination with an intake port for internal combustion engines, comprising an annular frame structure, a hood component to said frame member adapted to be connected to an intake port in communication with a source of supply, movable operating parts adjacent the inner peripheral flange of said frame member, comprising a support, a pair of concave-convex vanes mounted on said support and revolving horizontally and simultaneously at right angles with said support.
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