

F. A. HEATH.
MIXING DEVICE.

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1,153,913.

Patented Sept. 21, 1915.

Fig. 1.

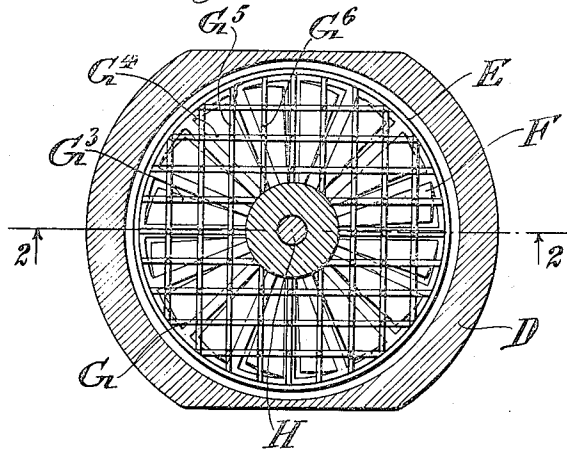
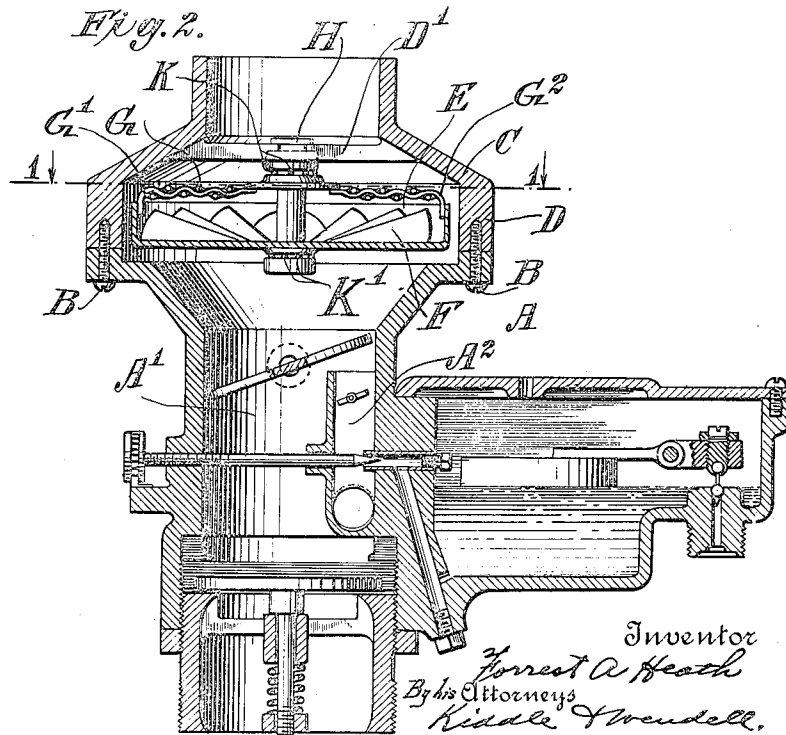


Fig. 2.



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UNITED STATES PATENT OFFICE.

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MIXING DEVICE.

1,153,913.

Specification of Letters Patent.

Patented Sept. 21, 1915.

Original application filed May 15, 1909, Serial No. 496,266. Divided and this application filed November 2, 1910. Serial No. 590,266.

To all whom it may concern:

Be it known that I, FORREST A. HEATH, a citizen of the United States, and a resident of the city of Jersey City, county of Hudson, and State of New Jersey, have invented certain new and useful Improvements in Mixing Devices, of which the following is a specification.

This invention relates to mixing devices for use in combination with carbureting devices for thoroughly mixing, commingling, agitating or stirring the elements which issue from the delivery port of a carbureter in order to make it more homogeneous prior to its being introduced into a hydrocarbon or explosive engine and it particularly relates to a mixing device which comprises a rotatable fan and a relatively coarse screen or wire mesh secured thereto and lying in a plane parallel to the fan.

This application is a division of my application entitled carbureters, filed May 15, 1909, Serial No. 496,266.

In my co-pending application Serial No. 538,041, filed January 14th, 1910, a mixing device is shown and described which is similar in many respects to the mixing devices which is shown and described in the present application.

As showing a specific embodiment of the invention, reference is made to the drawings in which—

Figure 1 shows a horizontal section of the mixing device shown in Fig. 2 and taken on the line 1—1 of the last mentioned figure. Fig. 2 is a vertical sectional view of the mixing device taken on the line 2—2 of Fig. 1 and also a sectional view of a carbureter which is used in connection therewith.

The carbureting device is designated by the reference character A and this has a main air passage A' and an atomizing chamber A² opening therein and is clearly described in said application above referred to.

To the upper end of the carbureting device there is detachably secured by means of screws B the mixing device C having a casing D and a member E mounted so as to rotate upon a central fixed shaft or stud H carried by the supporting web or member D' of the casing D. The rotatable member E comprises a fan F and a relatively coarse screen or wire mesh G secured thereto, preferably adjacent to the rear or upper side of

the fan and lying in a plane parallel therewith. It will be understood that the suction from the engine drawing the gas and air up through the member comprising the fan and screen will cause the fan to rotate the member and the screen will thus operate as an agitator, stirrer or commingling member for the fuel and air, by cutting across (as it does by the wires in the screen or mesh which extend outwardly toward the peripheral portion of the member, say for example, wires corresponding to G' and G² shown in Fig. 2 or any of the outwardly extending portions of the wires as for example G³, G⁴, G⁵ or G⁶ in Fig. 1) the advancing gas and air in a plane substantially at right angles to the direction in which the gas and air are moving when they pass the fan. It will furthermore be noted, as from an inspection of the drawings, that the outwardly extending portions of the wires constitute comparatively long but narrow and thin portions of material.

It is believed that the present construction offers a minimum of resistance to the travel of gas and air such resistance where a number 3 wire mesh (three openings to the inch) is used, being found to be practically negligible. Moreover in order to facilitate rotation of the mixing member E, ball bearings K, K' may be provided. In the embodiment of the improved form of mixing device shown in or in combination with a carbureter as disclosed in Fig. 2 the conduit from the carbureter to the engine is preferably widened and the rotatable mixing member is placed in this widened portion.

The fan of the mixing device is provided with a flanged periphery and the screen or wire mesh is secured on all sides of the flange. In this way substantially all the gas and air is made to pass through the screen and very little, if any, passes around the fan. It will be seen that the form of mixing device is exceedingly compact and for this reason it may be conveniently incorporated in various forms of carbureters or introduced into the connections between any carbureter and the intake of any engine. The wires in the screen or mesh which extend outwardly toward the peripheral portion of the member and referred to above, have still another effect upon the mixture passing through the fan and mesh than that

to merely agitate, commingle or stir and that is, they have a cutting or chopping effect upon particles of fuel which tend to pass by the fan due to the engagement of the wires with the particles of fuel. In this way the fuel particles become finely divided or broken up and of course a more thorough, homogeneous and uniform mixture of the fuel with the air will necessarily be effected and therefore it will be seen that one of the important features of this invention resides in the fact that there are commingling or cutting elements which extend outwardly toward the peripheral portion of the cutting member or what would be the same thing cutting elements which extend outwardly or away from the central portion of a rotatable mixing member comprising a fan.

It is obvious that various other forms and modifications may be made without departing from the spirit and scope of my invention.

I claim as my invention:

1. A mixing device for gas and air comprising a fan and a screen secured thereto and parallel therewith.

2. A mixing device for gas and air comprising a rotatable fan and a rotatable screen in a plane parallel with the fan and adjacent thereto.

3. A mixing device for gas and air comprising a fan mounted so as to rotate and a movable member upon the rear side of the fan and adjacent thereto, said member comprising commingling elements spaced from the blades of the fan, which commingling elements are comparatively long, thin and narrow.

4. A mixing device for gas and air comprising a fan mounted to rotate, and chopping or commingling elements movable therewith and extending outwardly from the central portion of the fan, said commingling elements being spaced from the fan blades and being of a comparatively long, thin and narrow material, such as wire or the like.

5. A mixing device for gas and air having a member comprising a fan and spaced wires extending outwardly from the central portion of the member.

6. A mixing device for gas and air com-

prising a fan mounted to rotate and a relatively coarse screen adjacent to the rear face of the fan and also capable of rotation.

7. A mixing device for gas and air comprising a fan having a flange extending around its periphery and an agitator secured to the flange.

8. A mixing device for gas and air comprising a fan mounted to rotate and having a flange extending around its periphery and a relatively coarse screen lying in a plane parallel with the fan and secured to the flange upon the rear side of the fan.

9. A mixing device for gas and air comprising a fan mounted to rotate, and having a flange extending around its periphery, and spaced outwardly extending wires or agitating members parallel with the fan and fitted within the flange upon the rear side of the fan.

10. The combination with a carbureter and a conduit for gas and air leading therefrom and having a widened portion, of a fan mounted to rotate in the widened portion and having a flange upon its periphery and a screen secured to the flange.

11. A mixer for gaseous fluids arranged to be disposed in the path of gaseous currents to be acted upon, comprising a tubular casing member having at one end a portion having an outwardly extending supporting surface and provided intermediate its ends with a rotatable member wholly supported by an integral web or spider which is located at the other end of the casing, said rotatable member comprising fan blades and spaced agitating or commingling members.

12. As an article of manufacture a mixer for gaseous fluids arranged to be disposed in the path of gaseous currents to be acted upon, comprising a tubular casing having a supporting portion at one end thereof, a spider at the opposite end, a central stud wholly supported by said spider and a rotatable member comprising a fan or propelling wheel and outwardly extending disintegrating members.

This specification signed and witnessed this 1st day of November, A. D., 1910.

FORREST A. HEATH.

Witnesses:

G. McGRAUN,

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