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GAS BURNER

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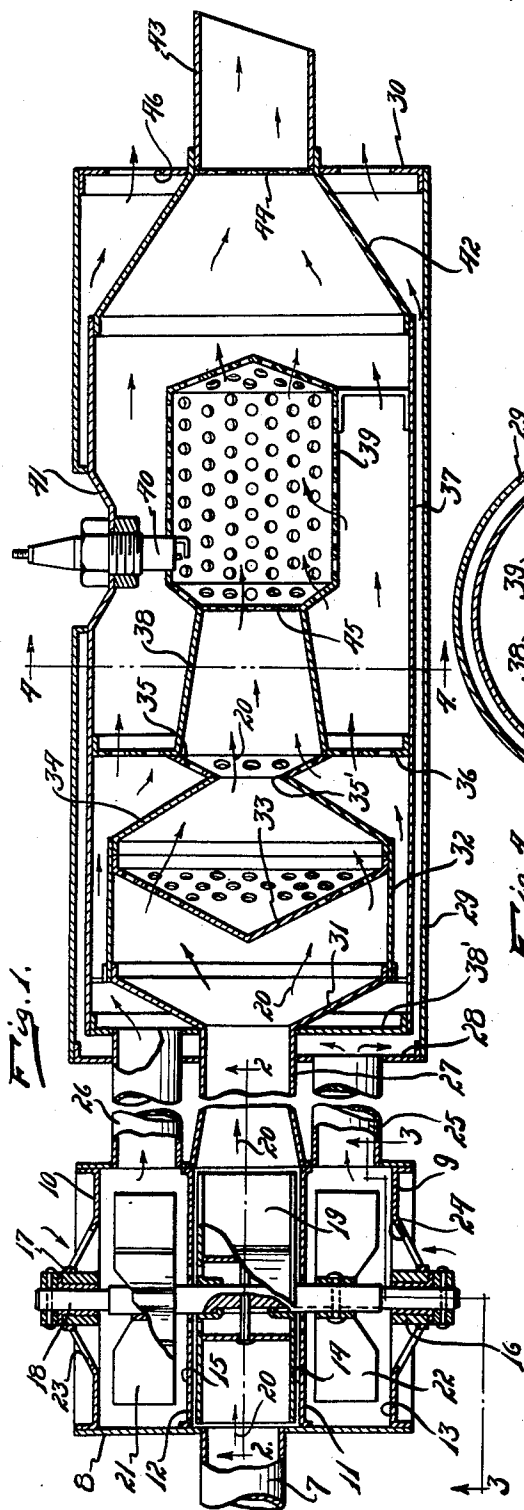


Fig. 3.

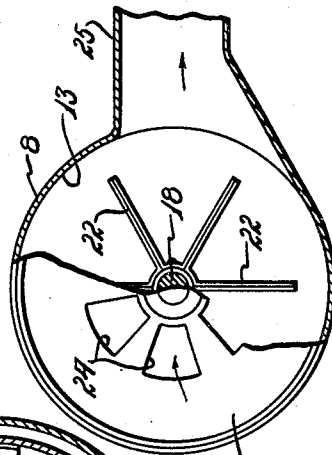


Fig. 4.

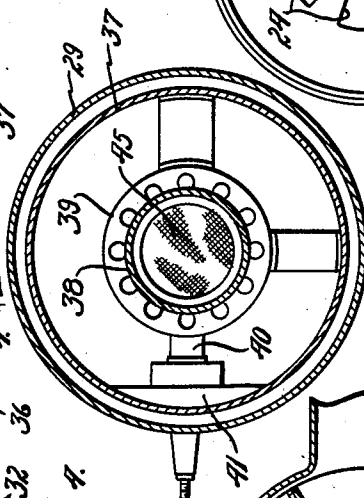
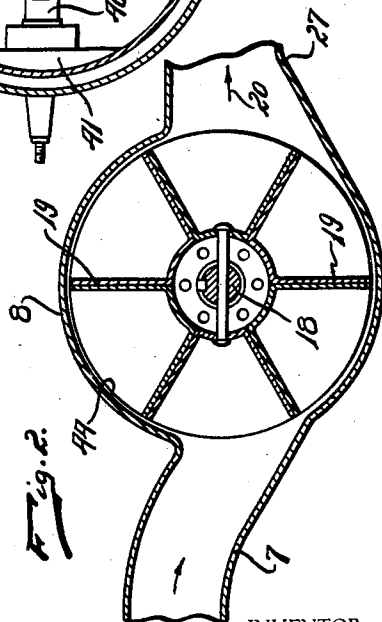


Fig. 2.



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6 Claims. (Cl. 183—6)

My invention relates to a new and useful improvement in a gas burner adapted for mounting on the exhaust pipe of internal combustion engines and is intended as a means for burning carbon monoxide and other gases which are exhausted from internal combustion engines. An object of the present invention is to render the operation of internal combustion engines safer from the standpoint of exhaust gases.

It is another object of the present invention to provide a device of this class which will be simple in structure, economical in manufacture, durable, easily and quickly assembled, and highly efficient in use.

Another object of this invention is the provision in a device of this kind of an air delivery mechanism operated through the force of the exhaust gases for delivering air to the mechanism.

Another object of the invention is the provision of a device of this kind in which air may be delivered into the burning chamber for mixing with the gases to be burned and in which additional air may be delivered into the mechanism for cooling purposes.

Other objects will appear hereinafter.

The invention consists in the combination and arrangement of parts hereinafter described and claimed.

The invention will be best understood by a reference to the accompanying drawing which forms a part of this specification and in which,

Fig. 1 is a central, longitudinal, horizontal sectional view of the invention.

Fig. 2 is a fragmentary sectional view taken on line 2—2 of Fig. 1.

Fig. 3 is a view taken on line 3—3 of Fig. 1.

Fig. 4 is a sectional view taken on line 4—4 of Fig. 1.

In the drawing I have illustrated the invention attached to the exhaust pipe 7 of an internal combustion engine. This exhaust pipe communicates with a housing 8 having end walls 9 and 10 and provided with the partitions 11 and 12 to provide the separated compartments 13, 14, and 15. Mounted in the walls 9 and 10 are bearings 16 and 17 in which is rotatably journaled the shaft 18. Fixedly mounted on this shaft 18 within the compartment 14 are vanes or blades 19 to provide a turbine in the compartment 14 positioned in the path of the exhaust gases which are entering the housing 8 in the direction indicated by the arrows 20. The incoming gases thus effect a rotation of the turbine fixedly mounted on shaft 18. Mounted on the shaft 18 within the compartment 15 is a turbine wheel 21 and a simi-

lar turbine wheel 22 is fixedly mounted on the shaft 18 within the compartment 13. The compartment 15 is in communication with the atmosphere through the openings 23 formed in the end wall 10 so that air may be drawn into the compartment 15 through these openings. The compartment 13 also communicates with the atmosphere through the openings 24. When gas is being exhausted through the pipe 17 and the shaft 18 is being rotated air will be drawn into the compartments and forced therefrom through the conduits 25 and 26 respectively, in the direction indicated by the arrows. The exhaust gas passes from the compartment or chamber 14 into the conduit 27. This conduit extends through the end wall 28 of a housing 29 which is provided at its opposite end with the end wall 30. The conduit 27 is provided with the flared end of extension 31 which serves as an end wall for the housing 32. Positioned in this housing is a cone-shaped partition or deflecting member 33 which is perforated and dished away from the concave end wall 34. This end wall is provided with an opening 35 at its center which registers with a central opening formed in the partition 35. This partition 35 abuts against the perforated partition 36 which is mounted in the interior housing 37. This interior housing has an end wall 38' through which the conduit 27 extends. The housing 29 may be considered an outer casing and the housing 37 the interior housing or casing. Extending from the partition 27 is the tapered neck or conduit 38 which communicates with the perforated burning chamber 39 into which projects the spark plug 40 which is mounted on the depressed portion 41 of the interior housing. The spark plug would, of course, be connected to a source of electrical supply. The end of the interior housing is provided with the conical wall 42 which communicates with the outlet conduit 43. A screen 44 is positioned at the inner end of the conduit 43 and a similar screen 45 is positioned at the inlet end of the burning chamber 39. The conduit 26 extends through the end wall 28 and also through the end wall 38' so as to communicate the interior of the housing 37 with the atmosphere. The conduit 25 projects through the end wall 28 and terminates at this end wall so as to communicate the interior of the housing or outer casing 29 with the atmosphere. The end wall 30 is provided with exhaust openings 46.

In operation when the internal combustion engine is operated the exhaust gases passing through the conduit 7 will, through their action

on the turbine wheel formed from the plates 19, effect a rotation of the shaft 18. This will also effect a rotation of the turbine wheels 21 and 22. The exhaust gases will pass through the chamber 32 and thence, as indicated by the arrows 20, into the burning chamber 39. Air directed through the conduit 26 will pass around the chamber 32 and thus become heated to some extent. Thence a portion of this air will pass into the burning chamber 39 and mix with the gases directed thereto through the exhaust conduit. This mixing of the air with the exhaust gases will facilitate combustion and render the device more efficient, inasmuch as a more complete combustion will be effected. A screen 45 serves as a means for mixing the air and gases and reducing to a certain extent their velocity so that the mixture will temporarily be lodged within the burning chamber 39 to be there exploded and burned. As the incoming air and gases are delivered the burned gas will, of course, be exhausted through the conduit 43. At the same time air delivered through the conduit 25 into the interior of the outer casing 29 will circulate around the interior housing 37 and effect a cooling of this mechanism. This air used for cooling will escape through the opening 46 as indicated by the arrows.

I have thus provided mechanism whereby the exhaust gases may be burned and whereby the exhaust gases themselves may serve as a means for bringing into the mechanism additional air for mixing with the exhaust gas and additional air for effecting a cooling of the mechanism so as to thus render the device highly efficient and attain the purposes and objects sought.

While I have illustrated and described the preferred form of construction I do not wish to limit myself to the precise details of structure shown but desire to avail myself of such variations and modifications as come within the scope of the appended claims.

Having thus described my invention what I claim as new and desire to secure by Letters Patent is

1. A device of the class described, comprising a housing adapted for attachment to an exhaust conduit and having a compartment communicable with the exhaust conduit; a turbine wheel mounted in said housing in the path of gases conducted thereto through said conduit; a second housing positioned adjacent said first named housing; an outer casing surrounding said second mentioned housing; means for establishing communication of said second mentioned housing with said compartment, said casing being in spaced relation to said second mentioned housing; means for conducting air into said second mentioned housing; means for conducting air into said casing around said second mentioned housing; and means operable upon operation of said turbine for effecting delivery of air through each of said air conducting means.

2. In combination with an exhaust conduit: a housing having a compartment therein communicating with said conduit; a turbine in said housing and rotatable by the gases passing into said compartment; a second housing positioned adjacent said first housing; a casing surrounding said second mentioned housing in spaced relation thereto; a conduit for conducting air into said second mentioned housing; blast producing means for delivering air through said conduit into said second mentioned housing, said blast producing means being operable in unison

with said turbine; a second blast providing means operable in unison with said turbine, a conduit for conducting air from said second blast producing means into said casing.

3. In combination with a conduit for conducting exhaust gases from an internal combustion engine; a housing having a compartment in communication with said conduit; a turbine positioned in said compartment and operable by the gases delivered thereto through said conduit; a housing for the reception of gases passing from said compartment; a casing surrounding said second mentioned housing and in spaced relation thereto; a conduit for conducting air into said casing; a conduit for conducting air into said mentioned housing; and blast producing means for forcing air through said conduits, said blast producing means being operated upon and in unison with the rotation of said turbine.

4. In combination with an exhaust conduit for conducting exhaust gases from an internal combustion engine; a housing having a compartment communicating with said conduit; a shaft extended through said housing; a turbine mounted fixedly on said shaft in said compartment and rotatable upon delivery of exhaust gases through said conduit into said compartment, said housing, having at opposite sides of said compartment, a compartment, each communicating with the atmosphere; a pair of blast producing members mounted, each, on said shaft at opposite sides of said first mentioned compartment and in one of said second compartments; a second housing; a casing surrounding said second housing and in spaced relation thereto; means for conducting air from one of said blast producing members into said second mentioned housing; means for conducting air from the other of said blast producing members into said casing; and means for conducting exhaust gases from said compartment into said second mentioned housing.

5. In combination with an exhaust conduit for conducting exhaust gases from an internal combustion engine: a housing having a compartment communicating with said conduit; a shaft extended through said housing; a turbine mounted fixedly on said shaft in said compartment and rotatable upon delivery of exhaust gases through said conduit into said compartment, said housing having a compartment at each of the opposite sides of said compartment communicating with the atmosphere; a pair of blast producing members mounted, each, on said shaft at opposite sides of said first mentioned compartment and in one of said second mentioned compartments; a second housing; a casing surrounding said second housing and in spaced relation thereto; means for conducting air from one of said blast producing members into said second mentioned housing; means for conducting air from the other of said blast producing members into said casing; means for conducting exhaust gases from said compartment into said second mentioned housing; and a burning chamber in said second mentioned housing for reception of exhaust gases and air delivered into said second mentioned housing.

6. In combination with an exhaust conduit for conducting exhaust gases from an internal combustion engine: a housing having a compartment communicating with said conduit; a shaft extended through said housing; a turbine mounted fixedly on said shaft in said compartment and rotatable upon delivery of exhaust gases through said conduit into said compartment, said housing

having a compartment at each of the opposite sides of said compartment communicating with the atmosphere; a pair of blast producing members each mounted on said shaft at opposite sides of said first mentioned compartment and in one of said second mentioned compartments; a second housing; a casing surrounding said second housing and in spaced relation thereto; means for conducting air from one of said blast producing members into said second mentioned housing; means for conducting air from the other of said blast producing members into said casing; means for conducting exhaust gases from said compartment into said second mentioned housing; a burning chamber in said second mentioned housing for the reception of exhaust gases and air delivered into said second mentioned housing; and means for igniting the gases in said chamber.

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