W. B. McSORLEY.

GAS AND AIR MIXER.

APPLICATION FILED MAY 31, 1913.

1,105,987. Patented Aug. 4, 1914.

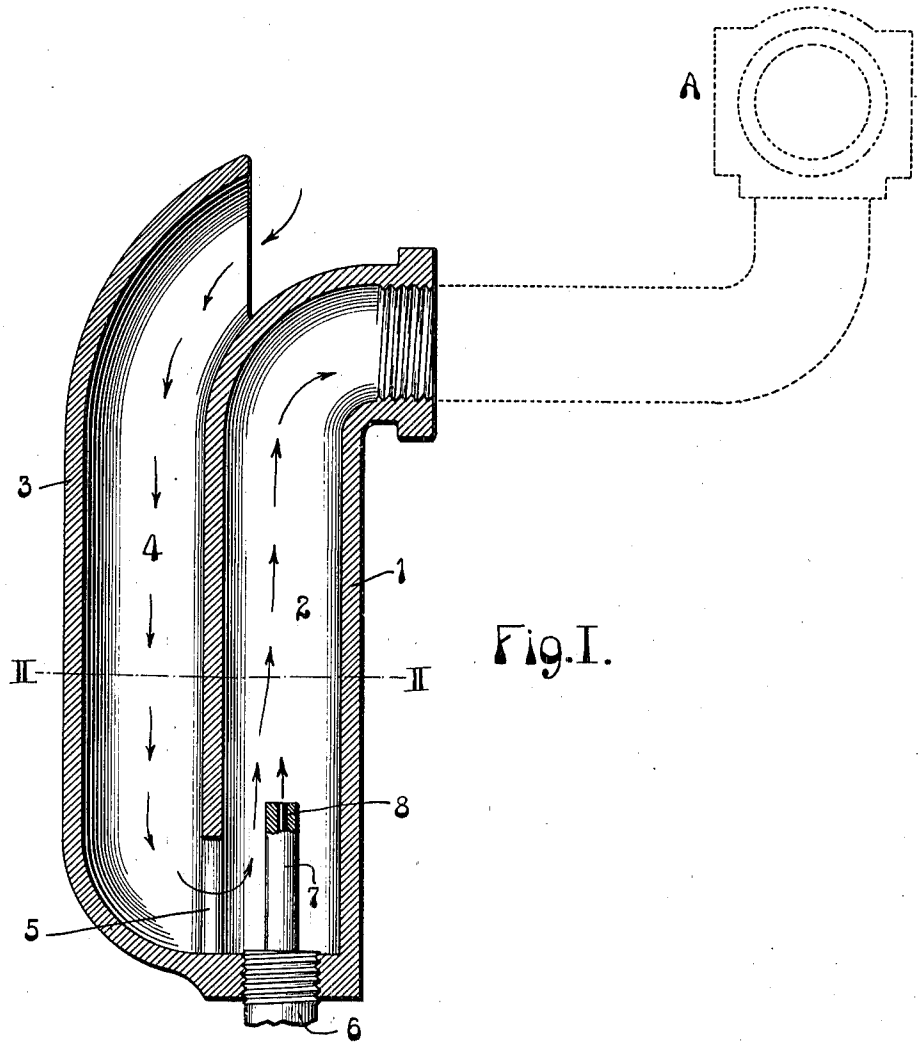


Fig. I.

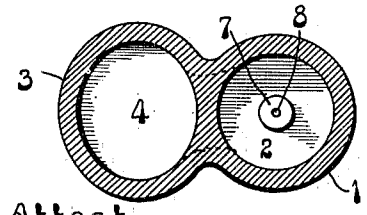


Fig. II.

Attest

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UNITED STATES PATENT OFFICE.

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GAS AND AIR MIXER.

1,105,987. Specification of Letters Patent. Patented Aug. 4, 1914.

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To all whom it may concern:

Be it known that I, WILLIAM B. McSORLEY, a citizen of the United States of America, and a resident of the city of St. Louis, in the State of Missouri, have invented certain new and useful Improvements in Gas and Air Mixers, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part of this specification.

My invention relates to a device in which gas and air may be mixed previous to the delivery to a fuel gas burner, and it has for its object the production of a device of this kind by which the proper proportionate quantities of air and gas may be brought together and mingled without fluctuation in the delivery, and with consequent complete combustion of the gas and air mixture; the device providing further against back firing of the gas and air mixture from the burner to the mixing chamber.

Figure I is a vertical section through my gas and air mixer, a burner communicating with the mixing chamber being shown in dotted lines. Fig. II is a horizontal section taken on line II—II, Fig. I.

In the accompanying drawings A designates a fuel gas burner such as may be supplied with a mixture of gas and air derived in a gas and air mixer constructed in accordance with my invention.

1 designates the vertical mixing leg of my gas and air mixer, this leg containing an up-duct 2 the upper end of which communicates with the burner A.

3 is a vertical air delivery leg parallel with the mixing leg 1 and containing a down-duct 4, this duct being open to the atmosphere at its upper end and communicating at its lower end by a port 5 with the lower end of the up-duct 2 in the leg 1.

6 designates a gas conducting pipe attached to the lower end of the mixer leg 1. This pipe has connected to it a nipple 7 which extends vertically in the mixing leg 1 and through the orifice 8 of which the gas delivered to the nipple from the conducting pipe is directed in an upward course through the mixing leg. The nipple 7 is preferably located centrally in the up-duct of the mixing leg and preferably extends above the port 5 furnishing communication between the air delivery down-duct and the up-duct in the mixing leg. The legs 1 and 3 are integrally connected together and closed at their lower ends, said legs being substantially 8-shaped in cross-section, and the port 5 being formed at the lower end of a partition wall common to both of said legs.

In the practical use of my gas and air mixer, the gas discharged from the nipple 7 is directed in an upward course in the up-duct 2 in the mixer leg 1 and, as a consequence, a suction is created in said up-duct and also in the down-duct 4 of the air delivery leg 3, whereby the air entering the upper end of said down-duct 4 is drawn downwardly, passes through the port 5 to become mixed with the gas escaping from the nipple 7 into the mixing up-duct 2. It will be perceived that by the described construction I am enabled to readily secure the proper mixture of gas and air, provided only that the orifice in the nipple 7 and the ducts 2 and 4 are made of the proper proportionate sizes; and further perceived that, owing to the air delivery duct 4 being vertical, open at its upper end, and communicating at its lower end with the up-duct of the mixer leg, there is a column of air constantly present in said down-duct which is not affected by atmospheric conditions exterior of the mixing device, hence there is no opportunity for fluctuations in the supply of air delivered to the mixing duct. Furthermore the constant column of air in the air delivery down-duct, present in said duct under external atmospheric pressure, acts to resist a descending flow of gas and air mixture from the burner through the down-duct in the mixer leg, and as a consequence back firing from the burner to the mixing duct is avoided.

I claim:

1. A gas and air mixer having an up-duct communicable at its upper end with a burner, having an air delivery down-duct open to the atmosphere at its upper end and communicating with the lower end of said up-duct, both of said ducts being open at their upper ends, and means for delivering gas into said up-duct.

2. A gas and air mixer having a mixing leg provided with an up-duct communicable at its upper end with a burner, having an air delivery leg provided with a down-duct fully open to the atmosphere at its upper

end and communicating with the lower end of said up-duct, and means for delivering gas into said up-duct, said gas delivering means being arranged to discharge gas into said up-duct at a point above the point of communication between the lower ends of said ducts, the said legs being closed and integrally connected together at their lower ends, and a wall common to both of said legs being formed between said integrally connected legs.

3. A gas and air mixer comprising a mixing leg having a screw threaded upper end adapted to be connected to a burner, the said mixing leg having an up-duct therein, an air delivery leg integrally connected at its lower end to the lower end of said mixing leg, said integrally connected legs being substantially 8-shaped in cross section and the wall uniting said legs being formed with a port at its lower end, the air delivery leg having a down duct open to the atmosphere at its upper end, both of said integrally connected legs being closed at their lower ends, and means for delivering gas to said up-duct.

W. B. McSORLEY.

In the presence of—
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