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L. C. JOHNSON
BURNER AND GENERATOR

Filed Feb. 11, 1922

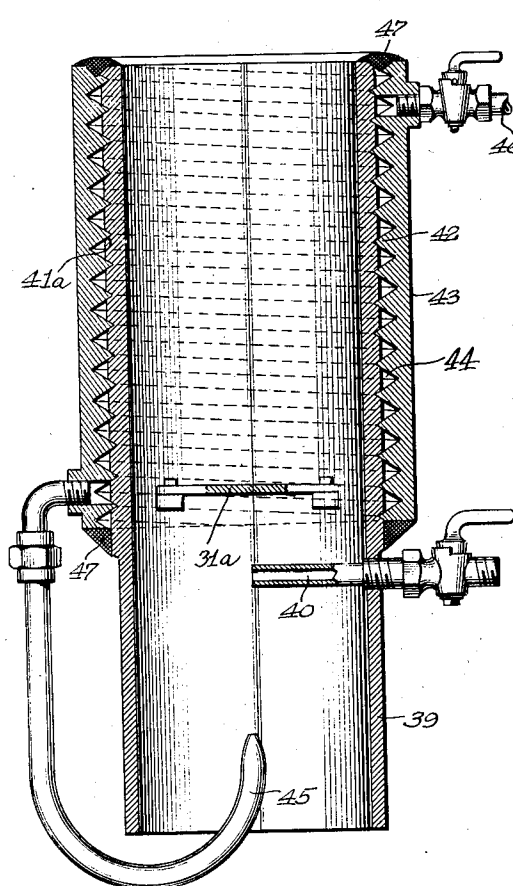


Fig. 1.

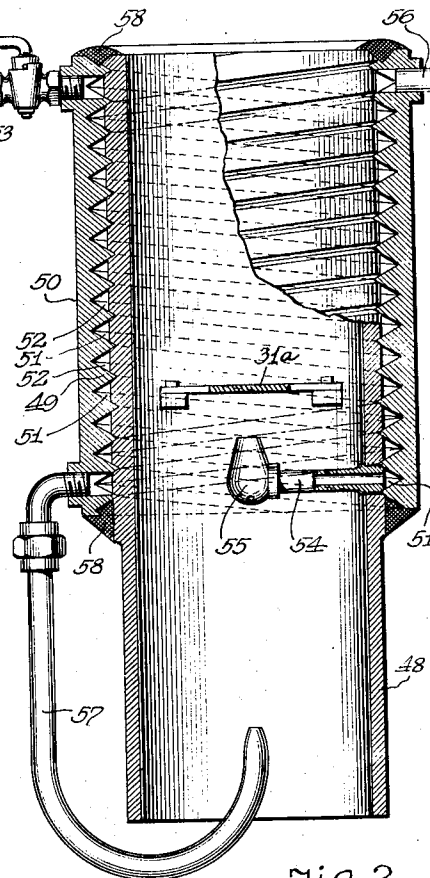


Fig. 2.

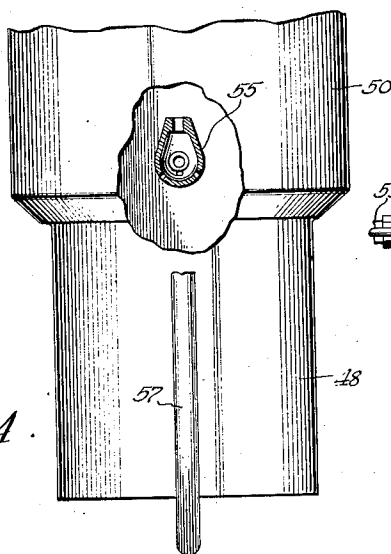


Fig. 4.

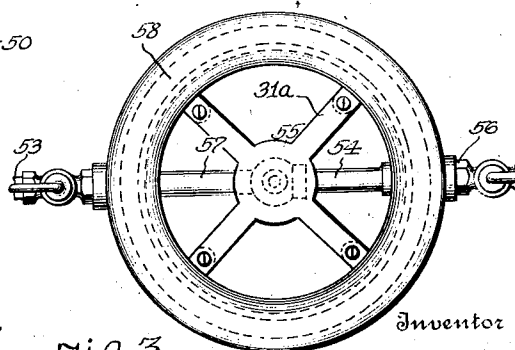


Fig. 3.

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UNITED STATES PATENT OFFICE.

LEO C. JOHNSON, OF DETROIT, MICHIGAN.

BURNER AND GENERATOR.

Application filed February 11, 1922. Serial No. 535,679.

To all whom it may concern:

Be it known that I, LEO C. JOHNSON, a citizen of the United States of America, residing at Detroit, in the county of Wayne and State of Michigan, have invented certain new and useful Improvements in Burners and Generators, of which the following is a specification, reference being had therein to the accompanying drawings.

My invention aims to provide a burner in which steam, gas and oil may be utilized as a fuel to produce a flame of caloric value, the burner converting water into steam and the steam saturated with oil or mixed with vaporized oil so as to increase the products of combustion and provide a flame of greater intensity than if oils alone were burned.

My invention further aims to provide a liquid fuel burner in which steam is generated and supplied to the burner in such a manner that it may commingle with oil placed in a highly heated or vaporized condition.

My invention still further aims to provide a burner having a combustion chamber surrounded by generating chambers, one or both being utilized as a fuel to commingle with steam generated from water heated by the gas. A very simple burner construction is used and a perfect combustion of fuel insured, and the construction of the burner will be hereinafter specifically described and then claimed.

Reference will now be had to the drawings, wherein—

Fig. 1 is a vertical sectional view of a gas burner;

Fig. 2 is a similar view illustrating an oil burner somewhat along the lines of the gas burner construction;

Fig. 3 is a plan of the oil burner;

Fig. 4 is an elevation of a portion of the same partly broken away, showing a jet in section.

The gas burner comprises a tubular casing 39 provided with a valved gas jet 40. The outer walls of the casing 39, at the outer end thereof, have a spiral groove 41^a to receive a spiral thread 42 on the inner wall of a housing 43, said housing being screwed on the casing just as though the housing and casing were in full screw-threaded engagement with each other, that is, the thread 42 fully meshing with the thread on the casing, whereas, in reality, the thread 42 is but partially engaged by the casing 1 thus providing a spiral chamber 44 about the

casing 39, said spiral chamber being formed by walls of the casing and walls of the thread 42. Communicating with the inner end of the chamber 44 is a gooseneck steam jet 45 extending into the inner end of the casing 39 and axially thereof, and communicating with the outer end of the chamber 44 is a valved water supply pipe 46. The ends of the housing 43 are suitably sealed or closed relative to the casing 39, as, at such places indicated 47. With this type of burner the water passing around the walls of the casing 39 is heated and converted into steam and the steam commingles with the gas to insure better combustion in the outer end of the burner casing.

Considering Figs. 2, 3 and 4, the casing 48 has a double spiral groove for the thread 49 of the housing 50, said thread cooperating with the casing 48 in providing two spiral chambers 51 and 52. The spiral chamber 51 communicates with a valved oil supply pipe 53 at the outer end of the burner, and communicating with the inner end of the chamber 51 is an oil pipe 54 provided with a jet 55 axially of the casing 48. This jet has a configuration which directs oil towards both ends of the casing 48.

Communicating with the outer end of the chamber 52 is a water supply pipe 56 and communicating with the inner end of said chamber is a gooseneck steam jet 57 extending into the inner end of the casing 48 to discharge steam axially thereof, the steam meeting the oil from the inner end of a nozzle 55. The housing 50 is sealed on the casing 48 at such places designated 58.

It is apparent that the device functions as a generator, inasmuch that liquid fuel is converted into a gaseous fuel, and the steam contributes to combustion with a flame of high caloric intensity emitted from the outer end of the casing 39.

It is thought that the operation and utility of my burner will be apparent without further description, and while in the drawings there is illustrated a preferred embodiment of my invention, it is to be understood that the structural elements are susceptible to such variations and modifications as fall within the scope of the appended claims.

What I claim is:—

1. A burner comprising a casing, a housing screwed on an end of said casing with the threads of the housing of greater depth than the threads of the casing so that the

walls of the housing threads will co-operate with said casing in providing a water receiving chamber, a steam jet in said casing communicating with said water chamber, and a fuel jet in said casing.

2. A burner as in claim 1, wherein the housing provides two chambers, one as set forth for water, and the other chamber adapted to receive the fuel which supplies the fuel jet.

3. A burner comprising a casing, a housing screwed on said casing providing independent water and fuel chambers adapted to receive water and fuel, a steam jet in said casing communicating with the water chamber, and a fuel jet in said casing communicating with the fuel chamber.

4. A burner comprising a casing having a combustion chamber in its outer end, a housing surrounding the outer end of said casing and providing helical chambers in which water and fuel may be heated by conduction from the walls of the casing to place the water and fuel in a combustible condition, the convolutions of one chamber alternating with the convolutions of the other chamber, and jets axially of said casing communicating with the water and fuel chambers of said housing.

5. The combination with an open end casing, said casing having a helical groove in

the outer wall thereof, a fuel jet extending into said casing and adapted to have fuel ignited at said jet to heat said casing, a fuel generator having an interior screw-thread in the groove of said casing providing a helical chamber in which liquid fuel is converted into a gaseous fuel, and means in connection with said generator for producing a partial vacuum in one end of said casing so that air will be drawn therein to communicate with the gaseous fuel ignited within said casing.

6. A fuel generating chamber for a burner, said chamber being formed between a casing and a housing in screw threaded engagement therewith, the walls of the housing threads cooperating with the walls of the casing in forming the chamber.

7. In a burner wherein ignited fuel is adapted to heat a chamber in which the fuel or ingredients thereof are heated preparatory to ignition, a helical chamber formed by walls, one of which is grooved and the other provided with screw threads extending into the wall grooves with the walls of the screw threads cooperating with the grooved wall in forming the chamber.

In testimony whereof I affix my signature.

LEO C. JOHNSON.