W. O. AMSLER.

FUEL BURNER.

APPLICATION FILED JUNE 1, 1918.

1,369,602.

Patented Feb. 22, 1921.

FIG. 1.

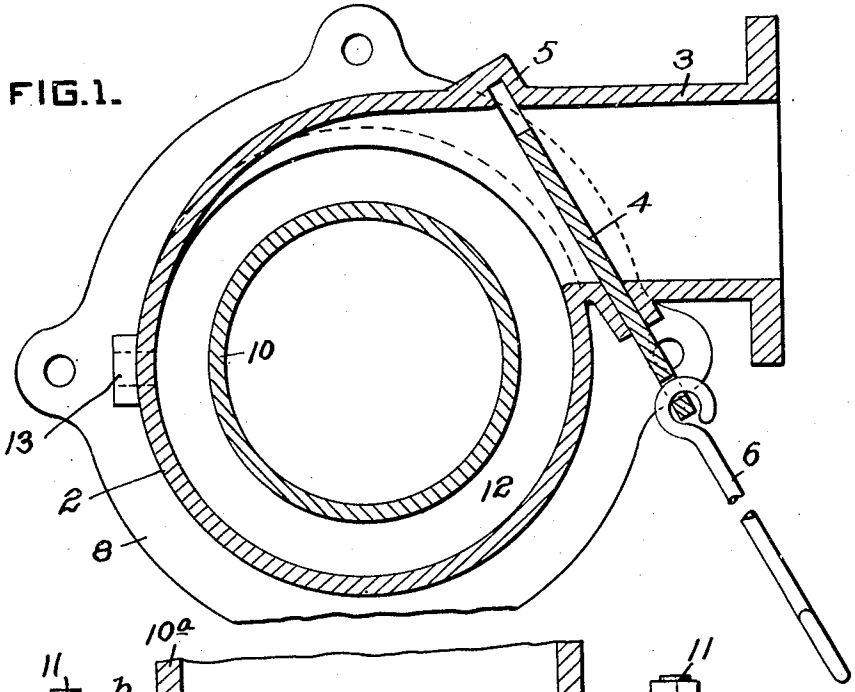


FIG. 2.

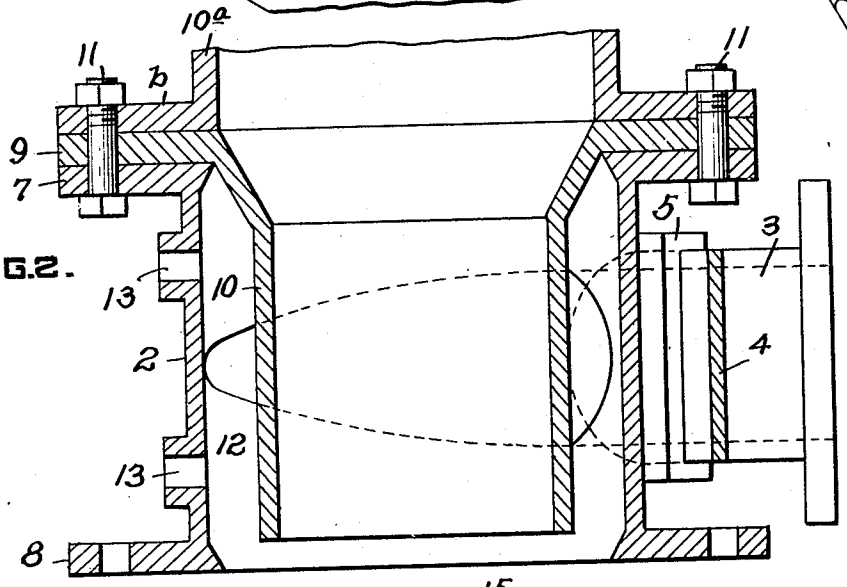
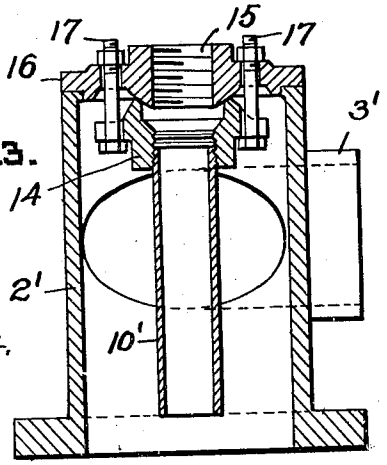


FIG. 3.



WITNESSES

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UNITED STATES PATENT OFFICE.

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FUEL-BURNER.

1,369,602. Specification of Letters Patent. Patented Feb. 22, 1921.

Application filed June 1, 1918. Serial No. 237,794.

To all whom it may concern:

Be it known that I, WALTER O. AMSLER, a citizen of the United States, residing at Edgewood, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Fuel-Burners, of which the following is a specification.

The prime object of my invention is to provide a new and improved fuel burner designed to be employed for burning a fluid fuel, as gas, a mixture of liquid and fluid fuels, as oil and gas, or pulverulent fuels, as powdered coal; and in which an induced air draft is utilized for introducing the fuel to a furnace with a spiral or rotary motion.

In the accompanying drawings, which illustrate applications of my invention,

Figure 1 is a part elevational and a part sectional view of a burner constructed in accordance with my invention;

Fig. 2 is a part plan and a part horizontal sectional view of the form of Fig. 1; and

Fig. 3, a vertical sectional view of a modified form of construction.

Referring to the drawing, and first to the form of Fig. 1, 2 designates a burner casing or hollow body preferably having the air blast inlet 3 formed integral therewith, although said nozzle may be formed separately and secured to the casing in any suitable manner.

A characteristic and important feature of the present invention resides in disposing the inner end of the air blast nozzle 3 on a tangent with the interior of the hollow body or casing, whereby when the air is introduced to the interior of the casing it will be given a spiral or rotary motion.

Passage of air through the nozzle and into the interior of the casing is controlled by a gate valve 4. Gate valve 4 is designed to operate in a gate frame 5. As illustrated, this frame is formed integral with the casing, constituting the body of the burner and its nozzle. 6 designates a push rod for manipulating the valve. Gate valve 4 is preferably arranged as shown, that is, in a plane inclined to the axis of the nozzle and close to the point of tangency and in a manner, when partially open, to deflect the air thus aiding in giving the air the rotary movement desired.

Casing 2 is provided with annular flanges 7 and 8. Flange 7 is adapted to receive a similar flange 9 of the fuel nozzle 10, said nozzle being secured to the flange 7 of the casing by means of bolts 11. The body of the fuel nozzle 10 is arranged concentrically with the interior of the casing in such a manner as to form an annular passage 12 between the outer wall of the nozzle 10 and the inner wall of the casing 2. 10^a designates a fuel supply pipe having a flange b, the latter being adapted to be secured to the burner structure by the bolts 11.

From the above, it will be understood that air under pressure introduced through the nozzle 3 will enter the annular chamber 12 and will, due to the disposition of inlet end of the nozzle relatively to the said chamber, travel in said chamber 12 with a spiral or rotary movement.

The burner 6, thus far described, is particularly adapted for burning gas as a fuel.

It is sometimes desirable to mix with the gas a liquid fuel, as oil, and when oil is used, the oil is introduced to the chamber or annular passage 12 through one or more ports, as 13. The burner nozzle 10 stops short of the end of the casing in order to permit the air blast to mix with the gas or the gas and oil prior to the mixture being ejected from the burner casing.

The burner structure is designed to be attached to the furnace by its flange 8, and I have found it unnecessary to employ a pipe extending from the burner into the interior of the furnace, although a pipe may be connected with the burner and project for any desired distance into the interior of the furnace.

In the form of Fig. 3, I have shown a modified construction or a burner particularly designed for use when powdered coal is employed as the fuel. Referring to this modified form, 2′ designates the casing having its air inlet nozzle 3′ formed integral therewith. The fuel nozzle 10′ in this construction is adjustably mounted within the interior of the burner casing 2′. The means shown for adjustably mounting the burner nozzle 10′ include an interiorly threaded element 14 adapted to have an end of the nozzle 10′ entered therein. The element 14 in combination with element 15 constitute a universal joint connection. 16 designates a cap covering one end of the burner casing 2′. The elements 14 and 15 constituting the universal joint connection are connected by means of bolts 17. The purpose of making

the fuel nozzle 10′ adjustable is to direct the fuel at any desired angle within the furnace.

When using gas alone or other fluid as the fuel, suitable plugs, not shown, may be placed in the ports 13, through which the oil is introduced to the burner.

What I claim is:—

1. A fuel burner including a hollow casing having an air blast nozzle formed integral therewith, a fuel nozzle within and disposed concentrically of the casing to form an elongated annular chamber between the fuel nozzle and the interior wall of the casing, said air blast nozzle arranged tangentially to the longitudinal axis of the hollow casing to produce a spiral movement of the air and fuel within the casing and as the mixture is ejected therefrom.

2. A fuel burner including a hollow casing, a nozzle for air in communication with the interior of the casing, a fuel nozzle within and disposed concentrically of the casing to form an elongated annular chamber between the fuel nozzle and the interior wall of the casing, said air blast nozzle arranged tangentially to the longitudinal axis of the hollow casing to produce a spiral movement of the air and fuel within the casing and as the mixture is ejected therefrom.

3. A fuel burner including a hollow casing having a flange at one end and formed with an air blast nozzle, a flanged fuel nozzle having its flange seated upon the flange of the casing and its body disposed within and concentrically of the casing, said air blast nozzle arranged tangentially to the interior of the hollow casing.

In testimony whereof I affix my signature in presence of two witnesses.

WALTER O. AMSLER.

Witnesses:

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