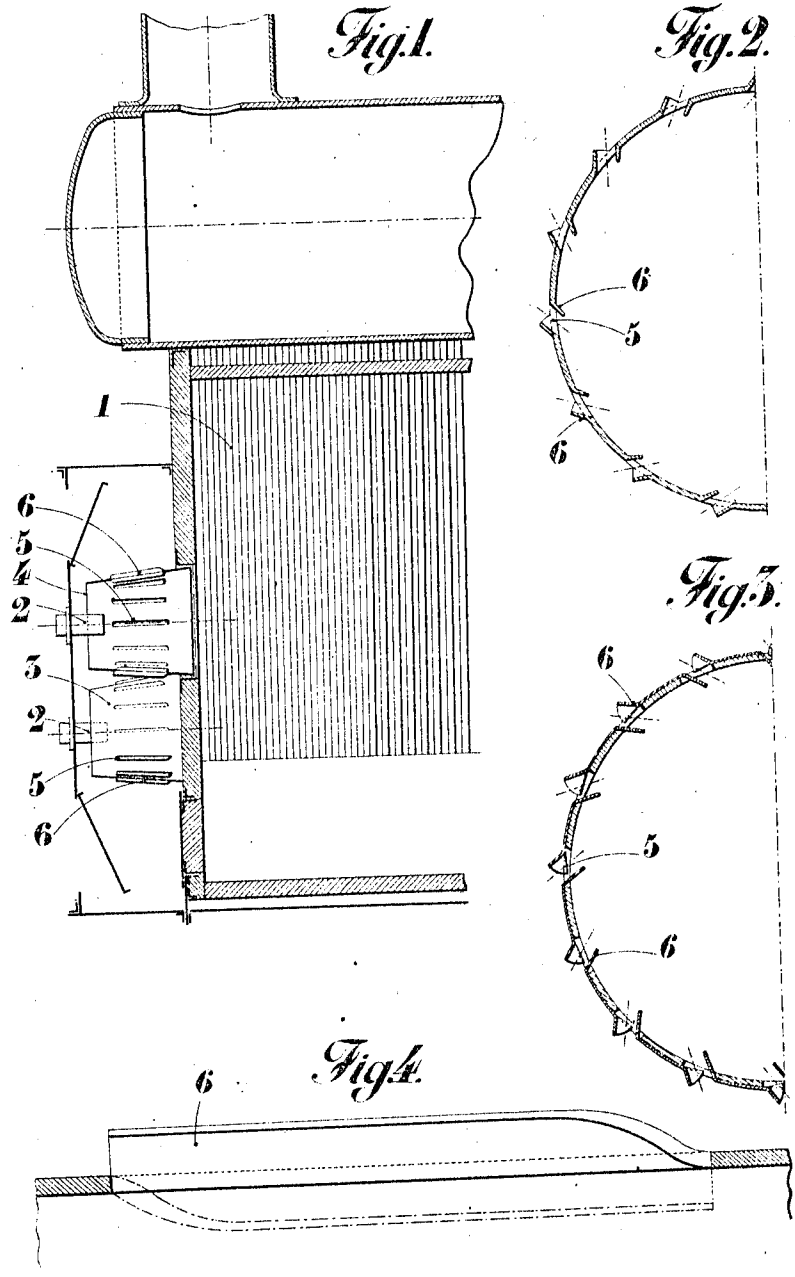


A. NORMAND.
 SPRAY BURNER.
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1,020,048.

Patented Mar. 12, 1912.



Witnesses:
Ernest Cunningham
 W. M. Dunn.

Inventor:
Augustine Normand
 by *James H. Hays*
Attys.

UNITED STATES PATENT OFFICE.

AUGUSTIN NORMAND, OF LE HAVRE, FRANCE.

SPRAY-BURNER.

1,020,048.

Specification of Letters Patent.

Patented Mar. 12, 1912.

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To all whom it may concern:

Be it known that I, AUGUSTIN NORMAND, citizen of the French Republic, residing at Le Havre, Department of the Seine-Inférieure, in France, have invented certain new and useful Improvements in Spray-Burners; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

The present invention has for its object the provision of an improved spray burner for liquid fuel boilers, constructed in such a manner as to obtain an especially intimate mixture of the air and the combustible oil. This is effected by admitting the air tangentially to the incoming sheet of pulverized oil discharged from the atomizer. This tangential direction of the air is produced by admitting it through openings or apertures of suitable form which are located in the wall of a sleeve-like air induction hood or nozzle, as will hereinafter appear.

In the accompanying drawing: Figure 1 is a longitudinal section taken on the axis of one of the burners of a boiler fired with liquid fuel, Fig. 2 is a cross section of one of the air nozzles, Fig. 3 is a similar view illustrating a modification of the air nozzle, and Fig. 4 indicates a detail of the air nozzle.

Each spray burner comprises an atomizer 2, supported in any convenient way, and an air induction hood or nozzle 3 into which said atomizer sprays the liquid fuel. The hood or nozzle 3 is open at both ends and the atomizer 2 enters the forward end of the same, while the rear end communicates with an opening formed in the front wall of the furnace. The hood or nozzle is preferably of frusto-conical form, as shown. The air enters said nozzle at its open front end 4 and also through a certain number of apertures or longitudinal slits 5, arranged in the side wall of said nozzle. These apertures are each provided with oppositely directed side flanges or lips 6 extending inwardly and outwardly respectively and arranged in such a manner as to direct the current of air entering through the apertures 5, tangen-

tially to the sheet of pulverized or atomized oil passing through the nozzle. In this manner, the intimate mixing of the oil and air is facilitated so that complete combustion of the mixture is obtained and consequently a higher efficiency of the boiler.

The flanges 6 may be formed in various ways. For example, as shown in Fig. 2, all that need be done is to turn the lips of the slits formed on the air nozzle 3 slightly outward and inward respectively. It is also possible, as shown in Fig. 3, to arrange a slitted outer shell on the solid body of the nozzle, in which case the bent-up lips are formed on the shell and coact with the slits of the body in the manner shown. It will be noted that the flanges of the slits are directed along chords of the circle formed by the air nozzle, as shown in Figs. 2 and 3, and that the flanges or lips of each slit are directed oppositely with regard to the body of the nozzle. Finally, in order to prevent any projection of the oil in the nozzle to the exterior thereof, the extremities of the flanges 6 may be bent inward toward the body of the nozzle, as shown in Fig. 4.

It is to be understood that the improved spray burner is capable of a number of different applications, and that the invention is not limited to the detailed construction herein shown and described.

What I claim is:—

1. A spray burner comprising an atomizer, an open-ended sleeve-like air nozzle into which said atomizer discharges, and provided in its side-wall with a plurality of air admission apertures, and flanges disposed on opposite sides of each aperture, directed inwardly and outwardly respectively, to conduct the incoming air in a tangential direction with respect to the fuel jet.

2. The combination with an atomizer, of an air nozzle into which the same discharges and provided with a plurality of elongated slits in its side wall substantially parallel to the axis of said atomizer, and flanges extending along the opposite sides of each of said slits, the flanges of each slit being oppositely directed, as described.

3. In a spray burner, an air nozzle comprising a body with apertures therein, and

a shell lying against the body and having oppositely directed flanges associated with each of said apertures.

4. In a spray burner, an air nozzle comprising a body with elongated longitudinal slits therein, and a shell inclosing said body and having openings overlying the afore-said slits, said shell being provided with op-

positely directed flanges at the sides of each of said openings.

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

AUGUSTIN NORMAND.

Witnesses:

CONSTANT GUÉRARD,
GEORGE AMES ALDRICH.