

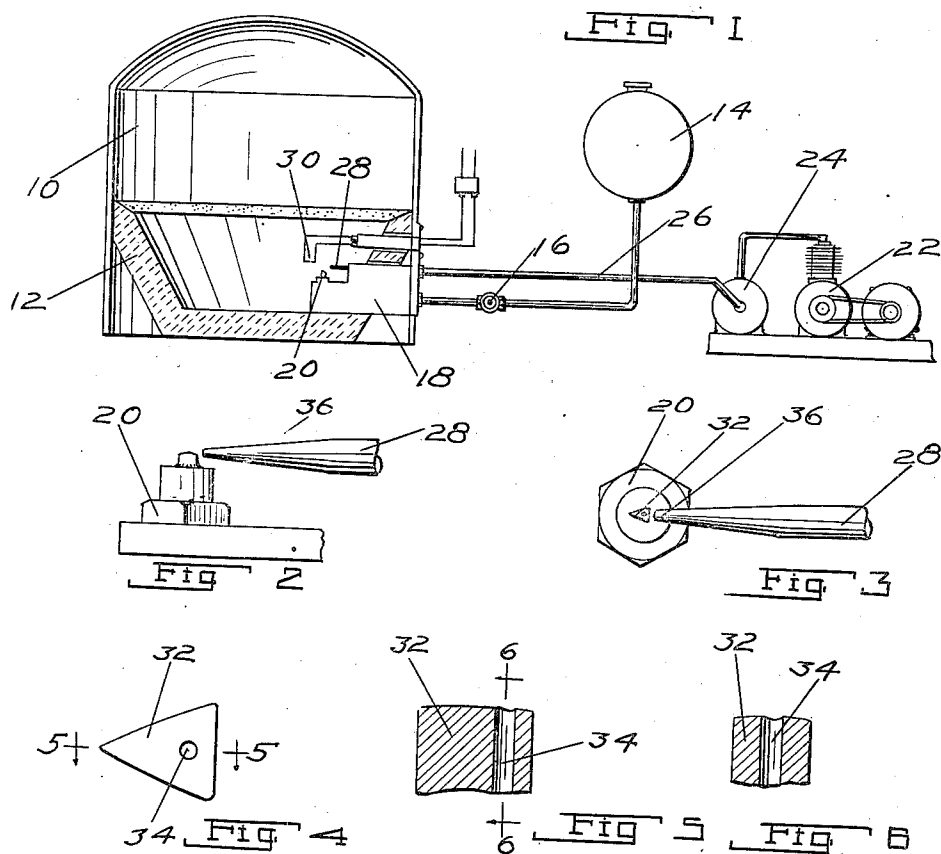
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G. W. PONTIUS, JR

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LIQUID FUEL BURNER

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INVENTOR.  
GEORGE W. PONTIUS JR.  
BY *McConkey & Booth*  
ATTORNEYS.

## UNITED STATES PATENT OFFICE

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## LIQUID FUEL BURNER

George W. Pontius, Jr., South Bend, Ind., assignor to International Engineering Corporation, Chicago, Ill., a corporation of Illinois

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2 Claims. (Cl. 299—142)

This invention relates to oil burners, and other liquid fuel burners, and is illustrated as embodied in an oil burner forming part of a domestic heating plant.

5 An object of the invention is to provide effective and simple means for thoroughly atomizing and vaporizing the fuel and mixing it with air. An important feature of the invention, from this point of view, relates to flowing the fuel  
10 downwardly in a thin sheet over a relatively extensive surface terminating in a sharp edge, and directing an air blast, or stream of air under pressure, across that edge to take up the fuel flowing over it.

15 In one arrangement the fuel is discharged onto the convex upper surface of a projecting part which is triangular in outline, the air blast in this case preferably being directed perpendicular to the shortest side of the triangle and toward the apex between the other two sides. This gives  
20 very effective atomization of the fuel and at the same time, since the flame is some distance beyond the triangular projecting part, it entirely prevents the deposition thereon of any carbon.

25 The above and other objects and features of the invention, including various novel combinations of parts and desirable particular constructions, will be apparent from the following description of the illustrative embodiments shown in the accompanying drawing, in which:  
30 Figure 1 is a diagrammatic vertical section through a domestic heating plant, with the novel burner and its air and fuel supply connections shown in side elevation;

35 Figure 2 is a side elevation on a larger scale of the fuel-feeding nozzle, and the air nozzle associated therewith;

Figure 3 is a top plan view of the parts shown in Figure 2;

40 Figure 4 is a top plan view on a still larger scale of the part over which the fuel is flowed in a thin sheet;

Figure 5 is a vertical section therethrough on the line 5—5 of Figure 4; and

45 Figure 6 is a vertical section therethrough on the line 6—6 of Figure 5.

50 The heating plant illustrated in Figure 1 includes a suitable furnace 10, shown as having a refractory fire pot 12 within which the fuel is burned as described below. Fuel such as oil is supplied from a tank 14 (under a gravity head

in the arrangement illustrated), past any suitable control valve 16 (which may be one of the well known automatic valves controlled by a room thermostat), and through a passage in a base 18, to a fuel-distributing device or burner  
5 head 20.

In this diagram the air is shown supplied under pressure by a motor-driven compressor 22 to a tank or reservoir 24, from which it is led by a suitable conduit 26 to an air passage in  
10 the base 18 and thence to an air nozzle 28. A suitable ignition device such as a spark plug indicated diagrammatically at 30 may be provided.

The fuel nozzle 20 carries a novel fuel distributing part 32, formed with a convex upper surface, and having an upwardly extending fuel passage 34 discharging the fuel at the highest point on the convex upper surface, whence it  
15 flows downwardly in a thin sheet over that surface and over the sharp edge at its periphery.

20 The fuel-distributing part 32 is preferably triangular in outline and is formed with sharp edges, with the air blast from the nozzle 28 directed approximately perpendicularly across its shorter side and toward the apex between the  
25 two longer sides.

While one illustrative embodiment has been described in detail, it is not my intention to limit the scope of my invention to that particular  
30 embodiment, or otherwise than by the terms of the appended claims.

I claim:

1. A liquid-fuel burner comprising a part having a convex upper surface of triangular outline and with sharp peripheral edges, means for discharging liquid fuel onto the highest part of  
35 said surface to flow toward said edges, and means for blowing a stream of air across said surface generally at right angles to one of said edges and toward the apex at the junction of the other  
40 two edges, to take up said fuel.

2. A liquid-fuel burner comprising a part having a convex upper surface with its outline having two sides meeting in a sharp angle and with sharp peripheral edges, means for discharging  
45 liquid fuel onto the highest part of said surface to flow toward said edges, and means for blowing a stream of air across said surface toward said sharp angle to take up said fuel.

GEORGE W. PONTIUS, JR.