

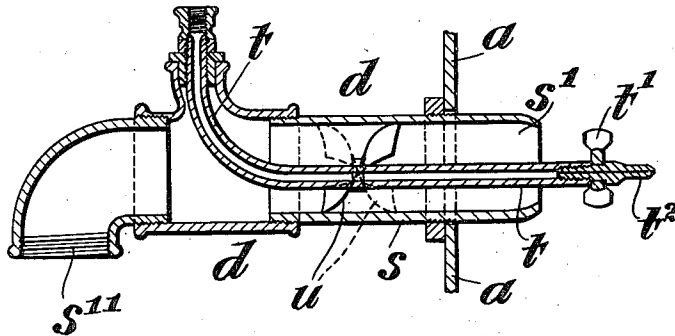
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LIQUID FUEL ATOMIZER.

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1,046,412.

Patented Dec. 3, 1912.



Witnesses:

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By

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UNITED STATES PATENT OFFICE.

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LIQUID-FUEL ATOMIZER.

1,046,412.

Specification of Letters Patent.

Patented Dec. 3, 1912.

Original application filed February 24, 1911, Serial No. 610,548. Divided and this application filed
February 7, 1912. Serial No. 675,935.

To all whom it may concern:

Be it known that we, JOHN BURDON, WILLIAM MURRAY BURDON, and MATTHEW MURRAY BURDON, all subjects of the King of Great Britain, and all residing at Bellshill, Lanarkshire, Scotland, have invented a certain new and useful Liquid-Fuel Atomizer, which is a subdivision of our application, Serial No. 610,548, filed February 24, 1911, and of which the following is a specification.

This invention relates to an improved device for atomizing liquid fuel and intimately mixing the same with air.

In order that the invention may be clearly understood we have hereunto appended an explanatory drawing which shows the atomizer in section.

The atomizer comprises a comparatively large air nozzle *s* which is tapered or turned in slightly at its end *s*¹, and fitted on the nozzle is a coupling piece *d* to which the air supply pipe *s*¹¹ is connected (the air supply which is under pressure, can be taken from any suitable source of supply, but, preferably, from a fan blower). Arranged concentrically within the air nozzle *s* is the tube *t* which is supplied with liquid fuel, this tube being provided with a small nozzle *t*². Located within the nozzle *s* are helical plates or blades *u* which cause the air to gyrate. *t*¹ is a small propeller or fan freely mounted on the nozzle *t*² just in rear of the oil outlet and in advance of the air outlet. With this arrangement the air under pressure from the fan or other blowing engine passes through the nozzle *s*, being caused to gyrate by the helical plates *u*, and it impinges on the fan *t*¹, being directed thereon by the tapered end *s*¹, causing it to rapidly revolve, thereby agitating the air and giving it also a subsidiary swirling or gyratory motion. The air in this highly agitated state rushes by the point of the nozzle of the oil tube, sucking up the oil which issues in small quantities from the nozzle and carries it forward in a highly subdivided condition and intimately diffused and mixed with the air.

It is important to note that in this atomizer the air is highly agitated and given a gyratory motion before coming in contact with the oil.

It has been found in practice that this atomizer is very effectual especially for heavy creosote or tarry oils.

The mixture of air and oil passes from the atomizer into the carbureter, or retort, or furnace *a* to which the atomizer is applied.

Having now fully described our invention what we claim and desire to secure by Letters Patent is:—

1. A liquid fuel atomizer working with air under pressure, having an air pipe within which a liquid fuel pipe is arranged, the liquid fuel pipe extending out beyond the end of the air pipe, and revoluble means arranged in the rear of the fuel outlet and in advance of the air outlet.

2. A liquid fuel atomizer working with air under pressure, having an air pipe within which a liquid fuel pipe is arranged, the liquid fuel pipe extending out beyond the end of the air pipe, revoluble means arranged on the fuel pipe in rear of the fuel outlet and in advance of the air outlet and fixed means arranged within the air pipe for causing the air to gyrate before it reaches the aforesaid revolving means.

3. A liquid fuel atomizer working with air under pressure having an air pipe within which a liquid fuel pipe is arranged, the liquid fuel pipe extending out beyond the end of the air pipe and having a revoluble fan thereon, said fan being in rear of the fuel outlet and in advance of the air outlet.

4. A liquid fuel atomizer working with air under pressure having a large air pipe within which a liquid fuel pipe is arranged, the liquid fuel pipe extending out beyond the end of the air pipe and having a revoluble fan thereon, said fan being in rear of the fuel outlet and in advance of the air outlet, and the end of the air pipe being tapered inward so as to direct the air against said fan.

5. A liquid fuel atomizer comprising, in

combination, an air pipe, a liquid fuel pipe fitted within the air pipe and extending out beyond the end thereof, helical plates arranged upon the liquid fuel pipe and within
5 the air pipe, and a rotatable fan on the liquid fuel pipe, said fan being arranged in rear of the liquid fuel outlet and in advance of the air outlet.

In testimony whereof we affix our signatures in presence of two witnesses.

JOHN BURDON.

WILLIAM MURRAY BURDON.

MATTHEW MURRAY BURDON.

Witnesses:

WILLIAM BROWN,

WILLIAM B. VERITY.