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LIQUID FUEL FURNACE.

APPLICATION FILED FEB. 24, 1911.

1,081,015.

Patented Dec. 9, 1913.

2 SHEETS—SHEET 1.

Fig. 1.

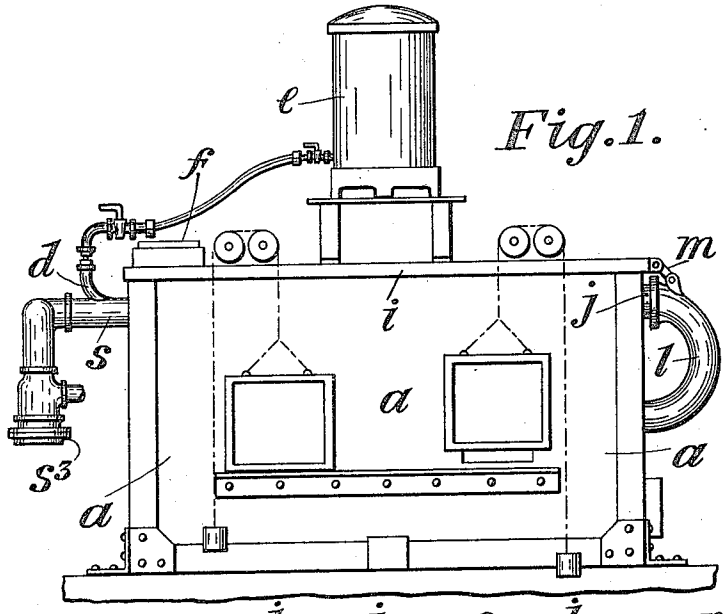


Fig. 2.

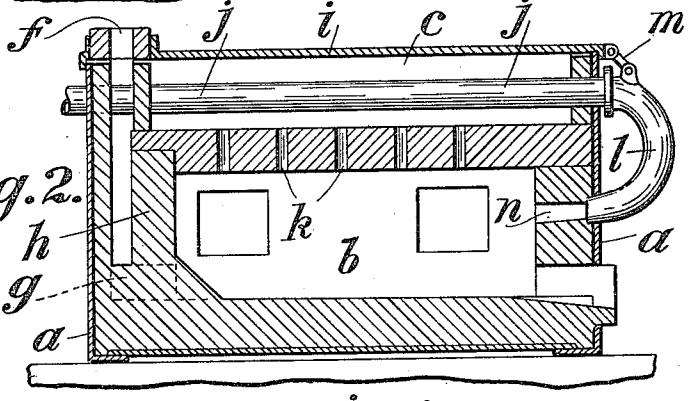
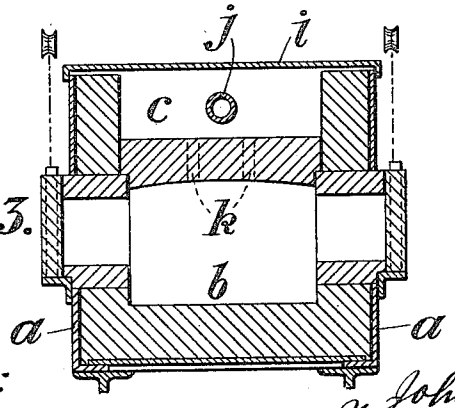


Fig. 3.



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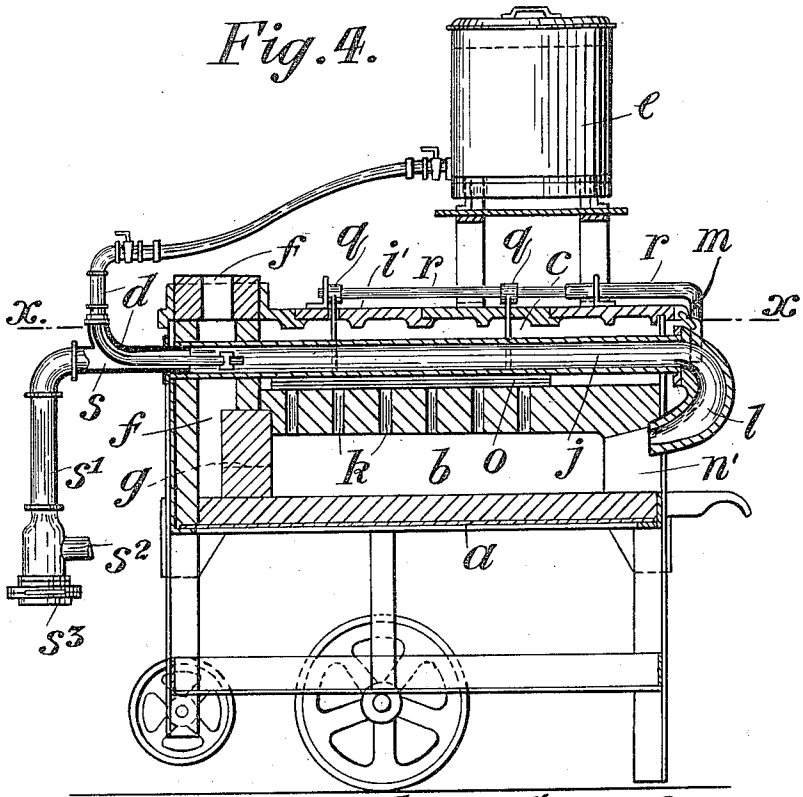
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2 SHEETS—SHEET 2.

Fig. 4.



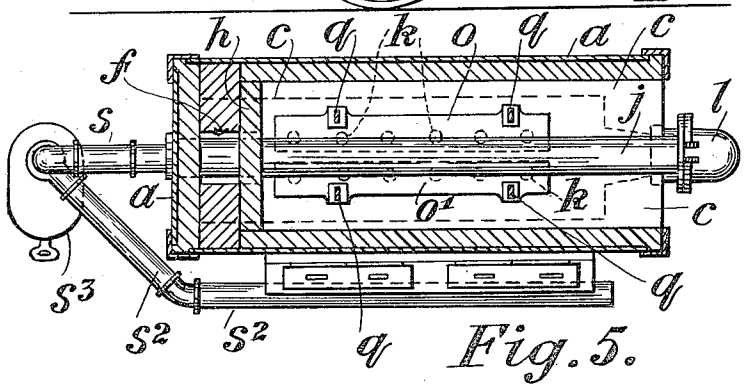


Fig. 5.

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LIQUID-FUEL FURNACE.

1,081,015. Specification of Letters Patent. Patented Dec. 9, 1913.

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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 certain new and useful Improvements in Liquid-Fuel Furnaces, of which the following is a specification.

This invention relates to liquid fuel furnaces of the class set forth in the specification of our prior United States Patent No. 882294 of 1908 and its object is to improve the construction thereof. The furnace is divided, as before, into two compartments by means of a suitable partition the one compartment constituting a heating chamber and the other compartment, which we may term the firing chamber, being constructed for the reception of bolts, rivets, tubes, plates or other articles to be heated or fired. The heating chamber in which is located the mixing and vaporizing chamber of the atomizer is heated by hot gases which pass from the firing chamber through passage ways or openings in the partition. Under this invention the mixing and vaporizing chamber is specially constructed and improvements are also made in the construction of the furnace and the burner.

In order that the invention may be clearly understood we have hereunto appended explanatory sheets of drawings whereon is shown, by way of example, two different types of furnaces with our improvements applied thereto. Two constructions of atomizers are also shown.

On the drawings:—Figure 1 is a side elevation of a furnace. Fig. 2 is a longitudinal section of the same. Fig. 3 is a cross section of the same. Fig. 4 is a longitudinal section of a portable furnace, and Fig. 5 is a horizontal section of the same on the line x, x.

a is the furnace, b the firing chamber, c the heating chamber, d the oil pipe, and e the oil supply tank.

The furnace, which may be made of any shape suitable for dealing with the articles to be fired or heated, is peculiar in so far as it is not provided with the usual chimney but has merely a short flue or passage f which communicates with the firing chamber by means of passages g one at each side of a central brick or back h. The heating chamber is preferably covered at the top thereof by means of one or more cast iron plates i (Figs. 1 and 2) or i^1 (Fig. 4).

The oil vaporizing chamber j of, or for, the atomizer consists of a cylindrical tube, which passes through the heating chamber, just above the passages k in the partition, so as to be highly heated by the hot gases from the firing chamber and a return bend l, which is exterior of the heating chamber and is supported, by means of a link m, from the cover plate i. This bend, which is separable from the tube j, has its end tapered and projecting into an opening or passage n (Fig. 2) or n^1 (Fig. 4) leading to the firing chamber. The advantage of this construction is that while the chamber j may consist of a simple tube the bend, being outside the furnace, is kept cool but can, if burnt, be readily replaced from the outside on disconnecting it from the tube j and disengaging the link m. For the purpose of regulating the heat in the heating chamber sliding dampers o, o^1, are provided the dampers being moved laterally, so as to cover or uncover the passages k, by means of arms q, q, connected with spindles r.

For supplying air under pressure to the vaporizing chamber j there is fitted into the end thereof (as shown at Fig. 4) an air blast pipe s, s^1 secured to a connection s^3 leading from a blowing engine, and leading from the oil supply tank e there is a pipe d of smaller diameter than the air blast pipe s, s^1, the pipe d leading to the interior of the air blast pipe and extending beyond the end of the same into the vaporizing chamber as shown at Fig. 4. If so desired the pipe s, s^1, may have a branch s^2 through which air can pass to the front of the furnace and blow, through perforations in the pipe s^2, in front of the door or doors so as to prevent the flames issuing from the furnace, when the door or doors is, or are, opened, burning the operator.

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

1. In a liquid fuel furnace, a firing chamber having an opening in the wall thereof, a heating chamber above said firing chamber, a wall separating said chambers, a vaporizing chamber in said heating chamber and adjacent the said wall, the latter having a series of passages therein arranged to direct

the heat along the length of said vaporizing chamber, whereby a uniform temperature is maintained therein, means for supplying liquid fuel and air to said vaporizing chamber, and a separable return bend communicating with said vaporizing chamber, situated exterior of said furnace and discharging into said opening, the discharge end of said bend being located exterior of said firing chamber.

2. In a liquid fuel furnace, a firing chamber having an opening in the wall thereof, a heating chamber above said firing chamber, a wall separating said chambers, a vaporizing chamber in said heating chamber and spaced from the said separating wall, the latter having a series of passages therein arranged to direct the heat along the length of said vaporizing chamber, whereby a uniform temperature is maintained therein, dampers arranged to control said passages whereby the heat to said heating chamber is regulated and a uniform temperature in the vaporizing chamber is maintained, means for supplying liquid fuel and air to said vaporizing chamber, and a return bend communicating with said vaporizing chamber situated exterior of said furnace and discharging into said opening.

3. In a liquid fuel furnace, a firing chamber, a heating chamber adjacent said firing chamber, a wall separating said chambers, a vaporizing chamber in said heating chamber and spaced from the said separating wall, the latter having a series of passages therein arranged to direct the heat along the length of said vaporizing chamber, whereby a uniform temperature is maintained therein, dampers arranged to control said passages whereby the heat to said heating chamber is regulated and a uniform temperature in the vaporizing chamber is maintained, means for supplying liquid fuel and air to said vaporizing chamber, and a return bend communicating with said vaporizing chamber and discharging into said firing chamber.

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

JOHN BURDON.
WILLIAM MURRAY BURDON.
MATTHEW MURRAY BURDON.

Witnesses:
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Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."