

APPLICATION FILED JULY 19, 1911.

Patented July 23, 1912.

2 SHEETS—SHEET 1.



Rev. G. Foster,

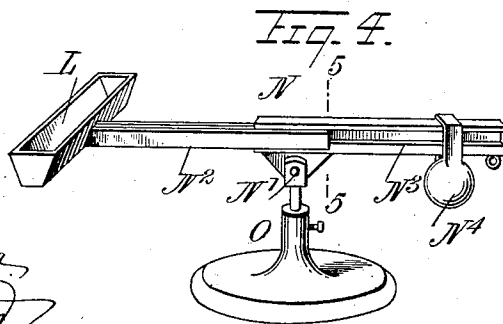
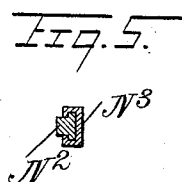
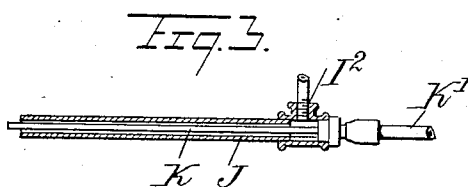
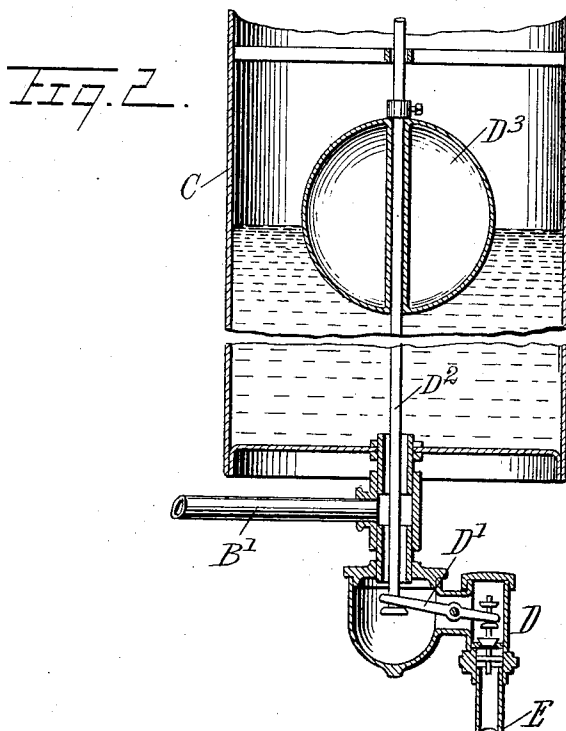
BY *Mumfco.*
ATTORNEYS

1,033,594.

F. J. KAESER.
OIL BURNING SYSTEM.
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2 SHEETS—SHEET 2.



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UNITED STATES PATENT OFFICE.

FRITZ JOHN KAESER, OF RENO, NEVADA.

OIL-BURNING SYSTEM.

1,033,594.

Specification of Letters Patent.

Patented July 23, 1912.

Application filed July 19, 1911. Serial No. 639,324.

To all whom it may concern:

Be it known that I, FRITZ J. KAESER, a citizen of the United States, and a resident of Reno, in the county of Washoe and State of Nevada, have invented a new and Improved Oil-Burning System, of which the following is a full, clear, and exact description.

The object of the invention is to provide a new and improved oil-burning system, for use in low pressure heating plants, cooking ranges and other heating apparatus, and arranged to insure a proper, safe and economical burning of the oil to allow convenient starting of the burner, to automatically shut off the oil in case of accident, and to prevent burning out of the generator.

For the purpose mentioned, use is made of a boiler connected with a source of water supply and with a steam generator arranged in the shell of a heating apparatus separate from the boiler, a superheater in the said shell above the said steam generator and connected with the steam compartment of the boiler and with the burner proper located in the said shell adjacent the said steam generator, the burner proper being connected with a source of oil supply.

A practical embodiment of the invention is represented in the accompanying drawings forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the views.

Figure 1 is a side elevation of the oil burning system, parts being shown in section; Fig. 2 is an enlarged sectional side elevation of the lower portion of the boiler; Fig. 3 is a vertical section of the burner proper with parts shown in side elevation; Fig. 4 is a perspective view of the tripping device for shutting off the oil supply in case of accident; and Fig. 5 is a cross section of the same on the line 5—5 of Fig. 4.

Within the shell A of the heating apparatus, of any approved construction, is arranged a steam generator B, in the form of a coil, connected at one end by a pipe B' with the lower end of a boiler C, having a suitable water inlet valve D connected by a pipe E with a source of water supply such as a water main, overhead tank or the like. The valve D is controlled by a lever D' (see Fig. 2), connected with the stem D² of a float D³, rising and falling with the water in the boiler C, so as to control the opening

and the closing of the valve D and thus regulate the admission of water to the boiler C to maintain the water level in the boiler at an approximately uniform height indicated on a water gage F attached to the boiler C. The pipe B' is provided with a shut-off valve B² and with a drain cock B³, as indicated in Fig. 1. The steam generator B is connected at its other end by a pipe B⁴ with the boiler C a distance above the bottom thereof, and the said pipe B⁴ is provided with a valve B⁵ and with a branch pipe B⁶ having a valve B⁷ and connecting with the top or steam compartment of the boiler C. A gage G is arranged on the pipe B⁸ to indicate the pressure of the steam in the boiler C, and a safety valve H is also provided, connected by a pipe H' with the stack A' of the shell A of the heating apparatus, so that in case of an abnormal pressure of steam in the boiler C the safety valve H opens and discharges the steam by way of the pipe H' into the stack A'.

Within the shell A of heating apparatus a distance above the generator B is arranged a superheater I, in the form of a coil connected at one end by a pipe I' with the steam compartment of the boiler C, the other end of the coil being connected by a pipe I² with the steam pipe J of a burner proper, having an oil pipe K extending within the steam pipe J. The pipe I² is provided with a screen I³ and a shut-off valve I⁴. The forward nozzle end of the oil pipe K projects slightly beyond the steam pipe J and both pipes extend within the shell of the heating apparatus adjacent to the generator B, as plainly indicated in Fig. 1. The oil pipe K is connected with an oil supply pipe K' connected with an overhead tank or other source of oil supply, and the said pipe K' is provided with a valve K² for regulating the flow of the oil to the burner oil pipe K. When the hydrocarbon burner is in use, the valves K² and I⁴ are open so that the oil passes into the pipe K, and superheated steam passes through the pipe J and atomizes the oil as the latter passes out of the nozzle and in the pipe K, the atomized oil then being burned in the shell A of the heating apparatus. It is understood that the heat from the flame heats the steam generator B to generate steam which passes into the boiler C, and the generated steam from the boiler C

passes to the superheater I, likewise heated from the burning fuel in the shell A of the heating apparatus, and the superheated steam passes into the pipe J to atomize the oil as above explained.

Immediately below the discharge end of the pipes J and K is arranged a pan L held on one end of a counterbalanced lever N, fulcrumed at N' on a suitable stand O, and the said lever N is made in two sections N² and N³, of which the section N² is slidable on the section N³ and carries the pan L, while the section N³ carries the fulcrum N', and on the said section N³ is mounted an adjustable weight N⁴ to counterbalance the pan L. The terminal of the lever section N³ is connected with one end of a chain P extending under a guide pulley Q and over a guide pulley Q', to then connect with a supporting arm or prop R' for a weighted arm R² held on the stem of a valve R arranged in the pipe K' at a point between the valve K² and the pipe K. Normally the valve R is held open by the supporting arm R', and in case the flame issuing from the burner becomes extinguished, the oil flowing out of the pipe K passes into the pan L and fills the same, finally overbalancing the weight N⁴ so that a swinging motion is given to the lever N which then exerts a pull on the chain P, which latter pulls the arm R' out from under the arm R² whereby the latter is released and swings downward to close the valve R, thus shutting off the supply of oil to the burner oil pipe K.

On the bottom of the heating apparatus A is arranged a starting pan S, located below the discharge end of the burner oil pipe K, so that when it is desired to start the hydro-carbon burner, the lever section N² carrying the pan L is moved outward on the section N³, and then the valve K² is opened so as to allow oil to flow through the pipe K into the starting pan S, in which

the oil is ignited to heat the generator B, with a view to generate steam. When this has been done, the valve I⁴ is opened so that the superheated steam from the superheater I can pass to the burner steam pipe J and out of the same, to atomize the oil issuing out of the terminal of the pipe K, the atomized oil being then burned in the heating apparatus, as previously explained.

It is understood that after the burner is in use, the lever section N² is moved inwardly, so as to locate the pan L below the discharge end of the burner to receive the oil in case of accident, as before explained.

By arranging the generator B in the manner shown in the drawings, it is not liable to be burned out as the water is continually circulating through it and keeping it completely filled, thus thoroughly protecting the generator from being burned out by the heat of the burner.

Having thus described my invention, I claim as new and desire to secure by Letters Patent:

An oil burning system, comprising a shell, a steam generating coil in the said shell, a boiler separate from the said shell and connected with a source of water supply and with the said generating coil, a superheating steam coil in the said shell directly above the said generating coil, and connected with the steam compartment of the said boiler, a hydrocarbon burner adjacent the said generating coil and connected with the said superheating steam coil, and an oil supply pipe for the said burner.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

FRITZ JOHN KAESER.

Witnesses:

J. S. PARKER,
NEVA HUDGINS.