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LIQUID FUEL BURNER

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Fig. 1.

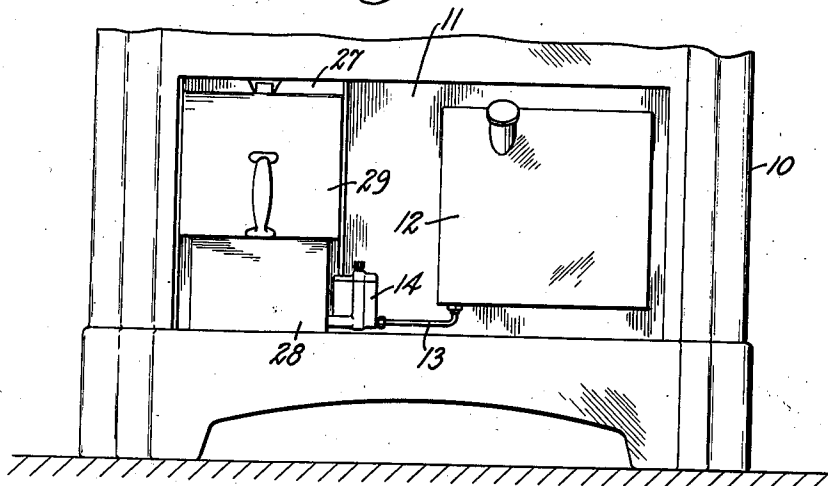
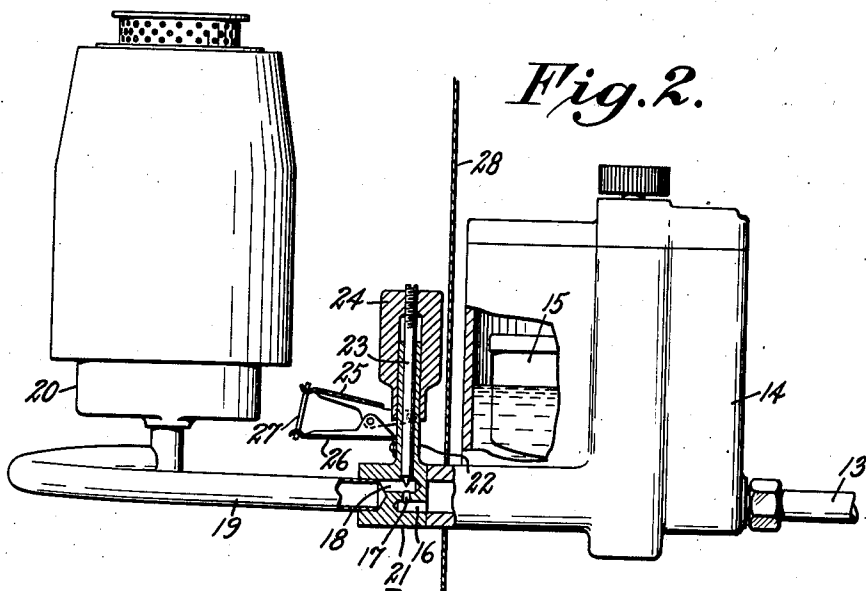


Fig. 2.



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UNITED STATES PATENT OFFICE

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LIQUID FUEL BURNER

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Application September 21, 1935, Serial No. 41,546

1 Claim. (Cl. 158—42.4)

My invention relates to liquid fuel burners, particularly for absorption refrigerating apparatus, and has for an object to provide improved safety mechanism for such burners.

5 The invention, together with the objects and advantages thereof, will become apparent from the following description taken in conjunction with the accompanying drawing forming a part of this specification, and of which:

10 Fig. 1 is a front view of the lower portion of an absorption type refrigerator generally showing the assembly of a kerosene burner and fuel tank in an apparatus compartment; and

Fig. 2 is a front elevation, partly broken away, of a burner for the refrigerator shown in Fig. 1.

Referring to Fig. 1, there is shown the lower part of a refrigerator 10 which is provided with an absorption refrigeration apparatus of a uniform pressure type. Briefly, a refrigeration apparatus of this type comprises a generator, condenser, evaporator, and absorber. The generator and absorber are interconnected through a liquid heat exchanger for circulation therebetween of an absorption liquid. The absorber and 25 evaporator are interconnected through a gas heat exchanger for circulation therebetween of an inert pressure equalizing gas such as hydrogen. The condenser is connected to receive refrigerant vapor from the generator and deliver liquefied refrigerant to the evaporator. Refrigeration is produced by evaporation and diffusion of liquid refrigerant into the inert gas in the evaporator. Refrigerant vapor is absorbed out of the inert gas into absorption liquid in the absorber. The vapor is expelled from solution in the generator by heat. A full understanding of this system may be had by reference to Patent No. 1,609,334 to von Platen et al. The generator may be heated by a kerosene or other liquid fuel burner as disclosed in an application Serial No. 734,075 of Wm. R. Hainsworth filed July 7, 1934. As disclosed in said application and more generally illustrated in Fig. 1 of the present application, the generator has a horizontal portion located in an apparatus compartment 11 in the lower part of the refrigerator 10. In Fig. 1, only the front plate 27 of the generator may be seen. An end of a heating flue for the generator, not shown, extends through the front plate 27, and a kerosene burner is positioned directly beneath this end of the flue. The burner is mounted on the lower end of the front plate 27 and is surrounded by a shield casing 28. A removable hood 29 forms a passage from the burner into the flue. A tank 12 contains a supply of kerosene which is fed through a conduit 13 to

a float chamber 14. The tank 12 is located well above the float chamber 14 to provide a suitable head of liquid. The kerosene is maintained at a predetermined level in the float chamber 14 by a valve actuated by a float 15 (Fig. 2) to close the inlet to the float chamber upon rise of kerosene to the predetermined level, as well known.

From the float chamber 14 the kerosene flows through a passage 16, a valve opening 17, a passage 18, and conduit 19 to the burner well 20. The passages 16 and 18 and the interconnecting valve opening 17 are formed in a casing 21. A portion 22 of the valve casing 21 extends upwardly and provides a cylindrical passageway or chamber in which is located a needle valve member 23. On the upper end of the needle valve member 23 is secured a weight 24. To the weight 24 is attached one end of a lever 25 which is pivotally mounted on a bracket 26 secured to the valve casing 21. Movement of the free end of the lever 25 toward the bracket 26 causes the weight 24 to move upwardly, and release of the lever allows the weighted needle 23 to drop and close the valve opening 17. The lever 25 is held in a contracted position with respect to the bracket 26 by a link of fusible metal 27' having a desired melting point and which is adapted to fit over the ends of the lever 25 and the bracket 26. When the link 27' is in place, the valve 18 is maintained in an open position.

In operation, in the event of backfiring at the burner 20, a predetermined rise in temperature within the burner shield or casing 28 will cause the fusible link to melt, releasing the lever 25 and permitting the weighted needle to drop and close the valve. It will be understood that due to the location of this shutoff arrangement in the passage between the float chamber 14 and the burner well 20, should an excessive temperature rise occur, causing a closure of the valve opening 17, the supply of fuel from the float chamber is immediately shut off and only a very small quantity of kerosene in the burner well and conduit 19 will burn before the supply to the burner is exhausted. The valve 18 is restored to open position by merely moving the lever 25 toward the bracket 26 and slipping a new fusible link in place. Since the upper end of the needle passage in part 22 of the casing is above the highest liquid level in the float chamber 14, it will be understood that a valve seal is unnecessary.

Various changes may be made within the scope of the invention as indicated by the following claim.

What is claimed is:

In an absorption refrigeration apparatus, a liquid fuel burner unit for supplying heat for said apparatus and comprising in combination, 5
a burner element, a storage vessel for liquid fuel, a device for preventing variation of level of liquid fuel above a predetermined level and having an inlet connected to said vessel, a conduit directly connecting the outlet of said device to said 10
burner element, a shut-off valve in said conduit, said valve including structure providing a chamber extending above said predetermined liquid level, a weighted member movable up and down in said chamber and arranged so as to close 15
when moved downward, said valve member extending upward in said chamber above said predetermined liquid level whereby the necessity for

any packing of said valve is avoided, a lever pivotally mounted on the outside of said structure and connected to raise and lower said weighted valve member, and a fusible link anchored on the outside of said structure and engaging said 5
lever to normally retain said weighted valve member in a raised position, said link being located adjacent said burner element so that upon flash back or other dangerous high temperature condition that may occur in operation 10
of the burner, said fusible link melts and releases said weighted valve member, thereby permitting the valve member to drop downward to its closed position and shut off flow of fuel to said burner element. 15

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