April 5, 1932. H. C. HANSON 1,852,845

LIGHTER OF INSTANTANEOUS TYPE

Filed May 23, 1928

Fig. 1.

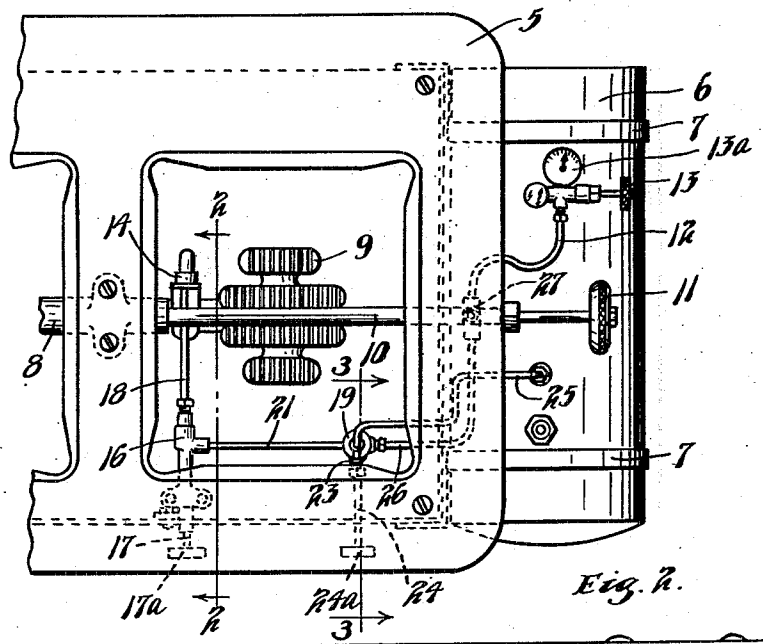


Fig. 2.

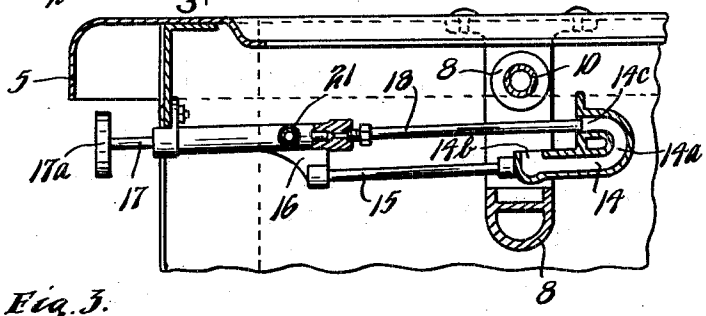
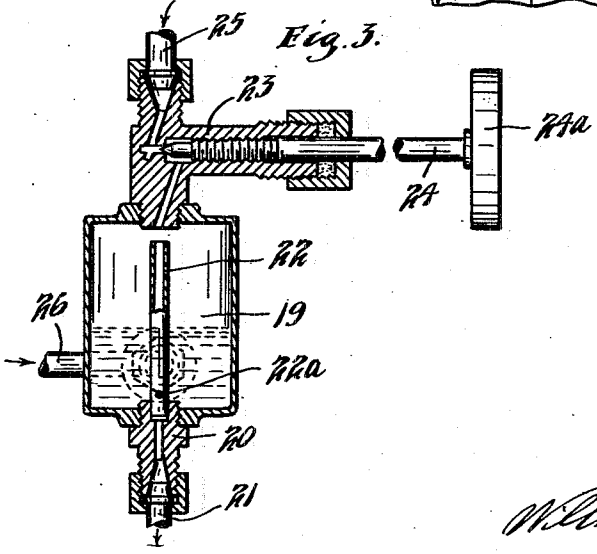


Fig. 3.



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UNITED STATES PATENT OFFICE

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LIGHTER OF INSTANTANEOUS TYPE

Application filed May 23, 1928. Serial No. 280,092.

This invention relates to a stove of the type using a vaporizing liquid hydrocarbon fuel. Cooking and heating stoves using a volatile hydrocarbon fuel such as gasoline, are now quite extensively used. In most of these stoves it is necessary to have some priming means for starting the same, or some means separate from the stove for initially heating and starting the same. Such means have heretofore comprised priming cups and separate starting torches. In applicant's co-pending application, Patent Number 1,729,652, filed May 19, 1926, a form of torchless starter was illustrated, but in this it was necessary to hold a match under the small vaporizing tube of the starting burner.

It is an object of this invention, therefore, to provide a liquid hydrocarbon stove which can be lighted immediately, with the usual match, without heating any vaporizing member with the match.

It is another object of the invention to provide a liquid hydrocarbon stove having a vaporizing member, a burner for heating the vaporizing tube connected to the main burners, which starting burner can be immediately lighted with an ordinary match.

It is a further object of this invention as shown in the embodiment illustrated to provide a liquid hydrocarbon stove comprising a main burner, a vaporizing member, an auxiliary burner for heating the vaporizing member, and means connected with the main fuel tank comprising a separate fuel container adapted to receive fuel and air from the main fuel tank and furnish a combustible mixture to the starting burner, whereby the same can be started with an ordinary match.

These and other objects and advantages of the invention will be fully set forth in the following description made in connection with the accompanying drawings, in which like reference characters refer to similar parts throughout the several views and in which:—

Fig. 1 is a plan view of a portion of the stove having the invention applied thereto;

Fig. 2 is a vertical section taken on line 2—2 of Fig. 1, as indicated by the arrows; and

Fig. 3 is a section taken on line 3—3 of Fig. 1, as indicated by the arrows, Figs. 2 and 3 being shown on an enlarged scale.

Referring to the drawings, a stove is shown comprising a frame 5 to one end of which is connected a main fuel tank 6, the same being shown as secured by straps 7 attached to said frame. The stove comprises a mixing chamber 8, which is attached by suitable conduits to the main burners, one of which is shown as 9. The vaporizing tube 10 supplies the fuel to the mixing chamber 8, said tube being shown as passing over the burner 9, whereby it is heated for the purpose of vaporizing the fuel. The vaporizing tube 10 is controlled by a valve 11 and is supplied with fuel by a tube or conduit 12 extending into the tank 6 to a point adjacent the bottom thereof. The flow of gasoline to tube 12 is controlled by a valve 13. A pressure gauge 13*a* is shown as connected to the body of valve 13, for indicating the pressure of air in tank 6. In accordance with the present invention, an auxiliary burner 14 is provided, comprising a mixing chamber 14*a* which has an opening 14*b* which is the ignition opening of the burner. The burner 14 is disposed beneath vaporizing tube 10 and as shown is located between burner 9 and mixing chamber 8. The burner 14 is supported by a rod 15 and secured to a bracket 16 which is in turn secured to the frame 5 as shown in Fig. 2. The bracket 16 also constitutes a valve body and contains the valve forming stem 17 equipped with the operating wheel 17*a*. A tube or conduit 18 extends from member 16 to the burner 14, the same being alined with and terminating substantially at the opening 14*c* in burner 14 and leaving a small space for air to enter burner 14 about tube 18.

An auxiliary fuel container 19 is provided, and this container, which is of comparatively small size, is connected at its bottom by the coupling 20 to a conduit 21 which extends to and is connected to the valve body 16. A tube 22 is also connected to coupling 20 and extends vertically in container 19, having an open upper end disposed adjacent the top of said container. Tube 22 has a small hole 22*a* therein adjacent the bottom of container 19. The container 19 has a valve body 23 se-

cured to the top thereof, having a valve seat therein with which co-operates the valve stem 24 having the operating wheel 24*a* thereon. Member 23 has connected thereto a conduit 25 also connected to fuel tank 6 and having its end disposed adjacent the top of said tank so as to be in the air space in said tank. A tube or conduit 26 also connects the container 19 with the conduit 12, said conduits 12 and 26 communicating with a fitting 27.

In operation, when it is desired to light the burner, the valve 13 will be opened, thus allowing fuel to be forced into the tube or conduit 12. It will be understood that the fuel in tank 6 is under pressure, air being pumped into said tank. The fuel can flow through conduit 12 and through conduit 21, but as long as valve 11 is closed, it cannot flow through vaporizing tube 10. There will normally be some gasoline in the member 19. This gasoline will be forced therein by the air pressure in tank 6 and will pass into member 19 through tube 26. This flow of gasoline into member 19 will be stopped at a certain period when the pressure of the air in member 19 balances the pressure of air in the tank 6. The gasoline in member 19 flows into the tube 22 through the small orifice 22*a*. The valves 17 and 24 are now opened and the pressure of air in member 19 will force the gasoline in tube 22 through tube 21 to the valve body 16, through tube 18 and into the mixing chamber 14. The air moving with the gasoline through tube 22 and through the tube 21 vaporizes a sufficient amount of the gasoline to make a combustible mixture and this combustible mixtures issues through the opening 14*b* and can be lighted at once. There is enough of this combustible mixture formed to heat the tube 18 so that the burner continues to function with gasoline supplied from container 19. As soon as the burner 14 has been lighted, valve 24 is closed, shutting off the air supply. Then chamber 19 will be filled with gasoline so that by the time the air contained in chamber 19 has been all forced through the conduit 21 to burner 14, tube 18 will be sufficiently heated to vaporize the gasoline and burner 14 will continue to burn as long as desired, or until vaporizing tube 10 is sufficiently hot to vaporize the gasoline for the balance of the burners. Valve 11 is then opened and burner 9 lighted, after which valve 17 may be closed, leaving chamber 19 filled with gasoline ready for operation the next time the stove is to be lighted. In lighting the stove, immediately upon opening valve 24, gasoline level will be lowered in chamber 19 to outlet 26, leaving gasoline to produce vapor for supplying burner 14 until vaporizing tube 18 is hot enough to convert the raw gasoline into vapor. The main burners 9 will, of course, be kept in operation as long as desired and then turned off by closing the valve 11. The stove is then again in condition to be relighted.

From the above description it is seen that applicant has provided a simple and efficient lighting device for a hydrocarbon stove and one by means of which the stove can be instantly lighted with an ordinary match, without any preliminary priming or heating of the vaporizing member. The device necessitates the addition of very few parts to the regular stove and is easily and conveniently manipulated. The same has been amply demonstrated in actual practice and found to be very successful and efficient.

It will, of course, be understood that various changes may be made in the form, details, arrangement and proportions of the parts, without departing from the scope of the applicant's invention, which, generally stated, consists in a device capable of carrying out the objects above set forth, in the novel parts and combinations of parts disclosed and defined in the appended claims.

What is claimed is:—

1. In a heating device adapted to burn liquid vaporizing fuel having a vaporizing member and main fuel tank, a burner positioned to heat said vaporizing member, an auxiliary fuel container, a valve controlled conduit connecting the top of said container to the top of said tank and communicating with the air space therein, a conduit connected adjacent the bottom of said container and connected to said tank to communicate with the fuel in said tank, a tube upstanding in said container having an open upper end adjacent the top of said container and having a small orifice therein adjacent the bottom of said container and a conduit leading from said tube for conveying a combustible mixture of air and vaporized fuel for said burner.

2. In a heating device adapted to burn liquid vaporizing fuel and having a main burner, a vaporizing member and a fuel tank for holding fuel under pressure, an auxiliary burner for heating said vaporizing member to start said stove, an auxiliary fuel container connected at its lower portion to the fuel containing portion of said tank and connected at its top to the air containing portion of said tank, a member upstanding in said container having an open upper end adjacent the top of said container and having a small orifice thereinto adjacent the bottom of said container and a conduit connecting said member and said auxiliary burner.

3. In a heating device adapted to burn liquid vaporizing fuel and having a fuel tank adapted to hold said liquid fuel under air pressure and a vaporizing member, a burner for heating said vaporizing member, an auxiliary fuel container, a conduit connecting the lower portion of said container to the fuel containing portion of said tank, a conduit connecting the top of said container to the

air containing portion of said tank, a valve for opening and closing the last mentioned conduit, a member disposed in said container having an open upper end adjacent the top thereof and having a small orifice leading thereinto adjacent the bottom of said container and a conduit leading from said member for supplying a combustible mixture of vaporized fuel and air for said burner.

In testimony whereof I affix my signature.

HANS C. HANSON.