No. 766,819. PATENTED AUG. 9, 1904.

H. A. FRANTZ.

LIQUID FUEL BURNER.

APPLICATION FILED AUG. 11, 1903.

NO MODEL.

Fig. 2.

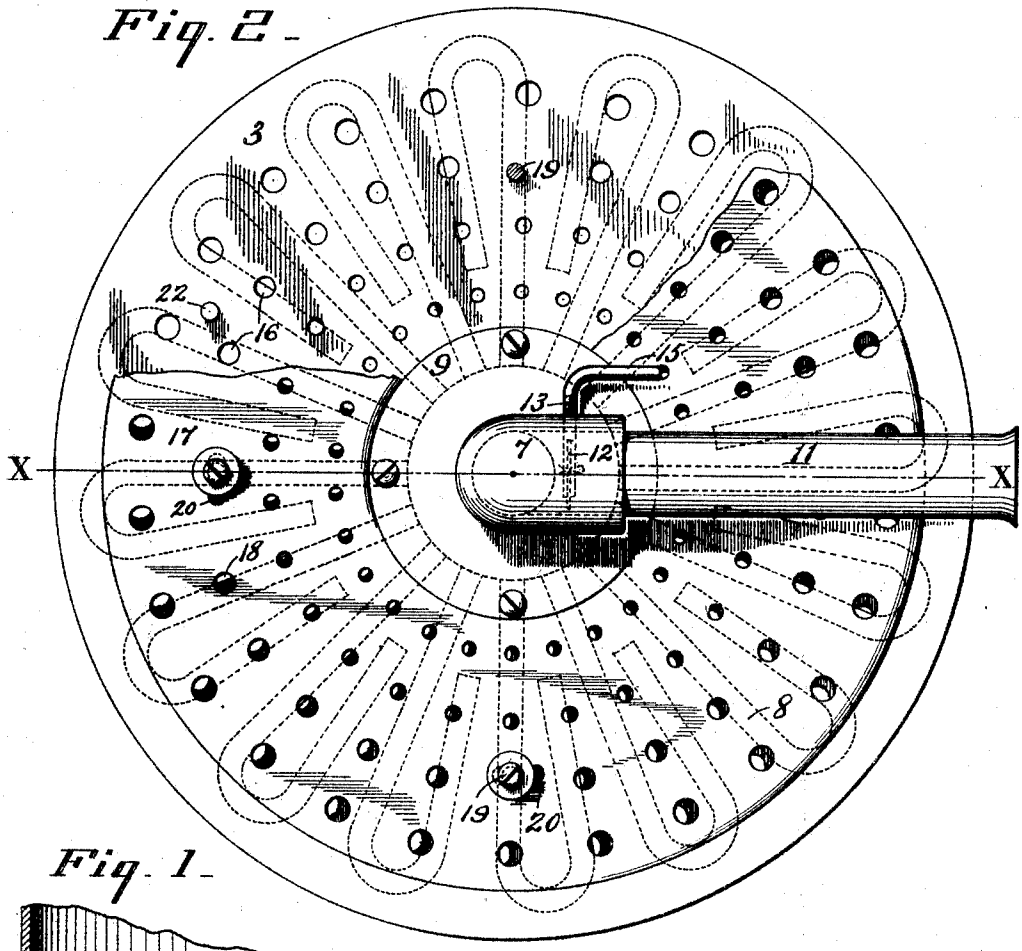
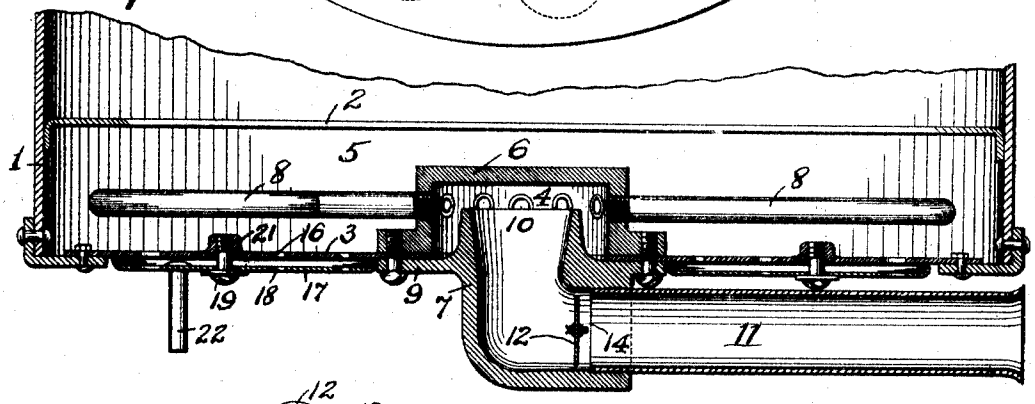


Fig. 1.



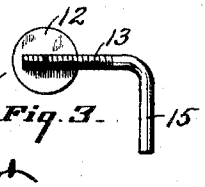


Fig. 3.

Witnesses,
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No. 766,819. Patented August 9, 1904.

UNITED STATES PATENT OFFICE.

HIRAM A. FRANTZ, OF CHERRYVILLE, PENNSYLVANIA.

LIQUID-FUEL BURNER.

SPECIFICATION forming part of Letters Patent No. 766,819, dated August 9, 1904.

Application filed August 11, 1903. Serial No. 169,104. (No model.)

To all whom it may concern:

Be it known that I, HIRAM A. FRANTZ, a citizen of the United States, residing in Cherryville, county of Northampton, State of Pennsylvania, have invented certain new and useful Improvements in Liquid-Fuel Burners, of which the following is a specification.

My invention relates to improvements in liquid-fuel burners intended more particularly for use in connection with automobiles. It is fully described in connection with the accompanying drawings, and the novel features are specifically pointed out in the claims.

Figure 1 is a cross-sectional view of my improved burner, taken on the line X X of Fig. 2, a portion of the boiler to which the same is attached being shown. Fig. 2 is a bottom view of the same, showing a portion of the movable air-inlet plate broken away. Fig. 3 is a separate view of the butterfly-valve employed.

In the construction shown my improved burner is represented as applied to a boiler the cylindrical shell 1 of which depends below the flue-sheet 2 and is provided with a flanged ring riveted thereto to form an attaching means for the burner. The latter comprises a circular air-inlet or draft plate 3, the outer edge of which is fastened to said flanged ring and which is formed with a large central opening and with numerous perforations 16 for the admission of air to the combustion-chamber 5, which is formed between said plate 3 and the flue-sheet 2 of the boiler. A fuel-distributing chamber 4 is secured to said perforated draft-plate and projects through its central opening into said combustion-chamber 5, and a mixing-tube 11, arranged to deliver into said distributing-chamber, is also centrally secured to said draft-plate by means of a circular bolting-flange 9. A series of burner-tubes 8 radiate from said distributing-chamber within the combustion-chamber and directly over the perforated plate 3. The construction thus far referred to is similar to that shown in my pending application, Serial No. 125,737, filed October 3, 1902, and forms no part of my present invention.

The purpose of my present improvements is to provide for a proper regulation of the supply to the combustion-chamber of fuel and of air for combustion under varying conditions, so as to avoid the troubles frequently experienced heretofore because of the admission to the combustion-chamber, particularly in stormy weather, of an amount of air in excess of that required for the complete combustion of the fuel supplied through the mixing-tube and sufficient in many cases to interfere seriously with the satisfactory operation of the burner.

To provide for satisfactorily regulating the fuel-supply to the combustion-chamber under varying conditions, I employ in the mixing-tube 11 a regulating-valve 14, preferably constructed, as shown, in the form of a butterfly-valve, comprising a disk 12 of smaller diameter than the size of the mixing-tube, so as to at all times permit a minimum flow of mixed fuel, fixed to a pivoted stem 13, having an exterior handle 15 for conveniently turning the valve to provide the required area of passage-way. In order to correspondingly regulate the air-inlet to the combustion-chamber and to properly control the supply under varying weather conditions, I provide a movable air-plate 17, having perforations 18 corresponding to the perforations 16 and hung immediately below plate 3. This plate 17 is circular in form and has a large central opening for encircling the bolting-flange 9 of the fuel-delivery chamber 4. The inner and outer circumferential edges are turned up to form an intermediate air-space between the plates 3 and 17, and screw-bolts 19 are passed through slots 20 and screwed into lugs 21 to retain the plate 17 in proper position beneath the plate 3. A handle 22 is provided to turn the plate 17 to cause the perforations 16 and 18 to register or not register, as desired. The spring of the plate 17 gives the necessary friction to maintain the movable plate stationary in any desired part of its swing, and the air-space between the plates insures the supply of air even when the perforations are not in register, the air-inflow area being substantially maintained in all positions of the movable plate 17, but the directness of the inflow through the perforations of the fixed plate being varied by adjustment of said mov-

able plate out of or into register with the fixed plate, whereby the inflowing current of air is obstructed and its direction changed or not, as desired, in passing through the intermediate air-space.

What I claim is—

1. In a burner substantially as described the combination with the burner-tubes and the fixed plate below said tubes having spaced air-inlet openings, of an adjustable register-plate having correspondingly-spaced air-inlet openings, arranged parallel with but spaced apart from said fixed plate to form an intermediate air-space, said adjustable plates serving to vary the direction of the air-inflow through the fixed plate without reducing the air-inflow area substantially as set forth.

2. In a burner the combination with a perforated air-inlet plate having a central opening, a central fuel-distributing chamber extending above said plate and having burner-tubes radiating therefrom above the same and a mixing-tube communicating with said chamber, of an annular register-plate rotatably secured to said air-inlet plate and spaced apart therefrom substantially as set forth.

3. In a burner the combination with a perforated air-inlet plate having a central opening, a central fuel-distributing chamber extending above said plate and having burner-tubes radiating therefrom above the same, and a mixing-tube communicating with said chamber and having a circular flange secured to the lower surface of said plate, of an annular register-plate rotatably secured to the latter and having an inwardly-flanged edge loosely inclosing said circular flange, and an inwardly-flanged outer edge contacting with said air-inlet plate, said inwardly-flanged edges serving to form an intermediate air-space between the fixed and movable plates substantially as and for the purpose set forth.

In testimony whereof I affix my signature in the presence of two witnesses.

HIRAM A. FRANTZ.

Witnesses:

F. A. SNYDER,

THOS. A. SNYDER.