

UNITED STATES PATENT OFFICE.

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HYDROCARBON-VAPOR BURNER.

SPECIFICATION forming part of Letters Patent No. 725,796, dated April 21, 1903.

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To all whom it may concern:

Be it known that we, WILLIAM H. TARMON and FRANK M. THOMPSON, citizens of the United States, residing at Fort Wayne, in the county of Allen, in the State of Indiana, have invented certain new and useful Improvements in Hydrocarbon-Vapor Burners; and we do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, which form part of this specification.

Our invention relates to improvements in hydrocarbon-vapor burners, especially designed and adapted for use in sad-irons.

It is well known that in the burners now in common use in sad-irons in which hydrocarbon is employed the imperfect and irregular generation or vaporization results from the high pressure of the gas which forces the hydrocarbon forward through the burner faster than it can be perfectly vaporized and that this undue pressure is in turn produced by the overheating of the supply-pipe, which necessarily results from the common arrangement of the burner in the rear end of the iron and of the supply-pipe directly above the burner-pipe which heats the iron.

The object of our present invention is to provide a cheap, simple, and efficient burner which is adapted to be arranged in the forward end of the iron instead of the rear end and to be connected with the forward end of the burner-pipe, thereby removing the body or exposed portion of the supply-pipe from direct contact with the flame from the burner-pipe, while at the same time a sufficient circulation of the hydrocarbon through the burner is provided for to secure a practically perfect generation under a substantially uniform degree of heat.

With this general object in view and others which will appear as the nature of the improvements is better understood the invention consists substantially in the novel construction, combination, and arrangement of parts, as will be hereinafter fully described,

illustrated in the accompanying drawings, and pointed out in the appended claims.

Similar reference-numerals indicate like parts throughout the several views, in which—

Figure 1 is a side view of our improvement in position in a proper sad-iron, broken away and showing the relative arrangement of the operative parts. Fig. 2 is a plan view of our improved burner. Fig. 3 is an enlarged perspective detail of our improved burner, broken away in part to show the ducts in which the fuel-gas is generated, the burner-pipe being broken away. Fig. 4 is a rear end view of the same in cross-section, showing the extension of the said passages about the burner-pipe.

All parts of our invention are of course made of suitable metal.

The body 1 of the burner of proper proportions and of any desired contour is preferably as compact as possible and has its forward extremity provided with the upright screw-threaded boss 2, into which the lower end of the supply-pipe 3 is secured, the upper end thereof being surmounted by a proper oil-receptacle 4 of common form. The body 1 is provided upon its forward end with a longitudinal integral extension 5, having an oblique longitudinal lug 6, in which is arranged any proper supply-valve 7, and has a pendent lug 8 in alinement with the body 1, in which is arranged a proper needle-valve 9. The said burner-body is supported in its upright position by two pendent lugs 10 and 11, the lug 10 forming a transverse foot and having a screw-threaded opening 13, in which the forward end of the burner-pipe 14 is secured. The said lug 11 also has a central circular opening adapted to snugly receive the said burner-pipe and has a sinuous fuel duct or passage 27 formed therein, passing around the said circular opening and connecting the longitudinal channel 15 of the burner leading from the supply-pipe with the parallel channel or duct 16, which leads to the said supply-valve. The burner-pipe 14 is provided upon its lower face with suitable flame-openings 17 in the usual manner, and the space 18 between the open forward end of the

burner-pipe and the adjacent end of the needle-valve lug 8 forms the ignition-chamber. The burner-body 1 has two longitudinal openings in its rear end to admit of the boring
 5 out of the said ducts or conduits 15 and 16, which are closed by proper screw-plugs 19 and 20, respectively. These conduits are much smaller in cross-section than the opening in the hydrocarbon-supply pipe. The sides of
 10 the said lug 11 are preferably rectangular, with opposite openings closed by proper screw-plugs 21.

The sad-iron 22, Fig. 1, in which our improved burner is mounted, may be of any
 15 proper construction having the usual thickened portion of the forward end omitted and having the forward end preferably concave, as shown, and having suitable openings therein for the protruding ends of the said supply
 20 and needle valves.

In the use of our invention in sad-irons the top plate 23 of the iron is preferably concave, as shown, with a convex integral forward portion 24, adapted to cover the said
 25 burner, leaving the body of the supply-pipe entirely upon the outside of the iron. The said sad-iron has a proper handle 28 and upper and lower ventilating lateral openings 25 and 26, respectively. Our improved burner
 30 is of course removably mounted in the iron, so that it can be lifted out upon the removal of the lid of the iron.

The operation of our improvement thus described is obvious and, briefly stated, is as follows: When the flame of the burner-pipe is
 35 ignited in the usual manner, the fuel-gas is generated from the oil which is supplied to the said passages 15 and 16 of the burner-body 1 by the flame from the underlying forward end of the said burner-pipe. As the
 40 fuel-oil from the reservoir to reach the exit at the ignition-chamber has to pass the entire length of the said passages 15 and 16, which are directly above and within the flame, and in addition has to circulate about the
 45 burner-pipe through the said passage 27, its generation into fuel-gas is perfectly secured, and as the burner-body in which the fuel-gas is generated has much thicker walls than
 50 those of the supply-pipe in common use and is subjected to but a comparatively small portion of the flames from the burner-pipe it is evident that the generating heat in our improved burner is practically uniform, thereby
 55 securing the desired regularity in the generation of the fuel-gas. Obviously this regularity of generation in our improved burner is secured by arranging the burner in the forward instead of the rear end of the sad-iron, and the generation is effected entirely within
 60 the burner itself and also by providing an extended circulation of the fuel-oil within the burner in which it is subjected to a practically uniform degree of heat.

65 Having thus described our invention and the manner of employing the same, what we desire to secure by Letters Patent is—

1. The combination with a sad-iron, of a burner arranged therein and comprising an elongated body provided throughout its
 70 length and at its top and bottom with longitudinal oil-ducts, a feed-pipe connected at one end of said body and extending through the sad-iron to the exterior thereof, a reservoir connected to said pipe for supplying oil
 75 to the burner, an elongated valve-casting arranged at one end of the body of the burner, and provided with a duct communicating with the lower duct of said body, a supply-valve arranged at the juncture of said ducts, 80
 a needle-valve also carried by said casting for controlling the vapor discharged therefrom, perforated lugs carried by the burner-body and depending therefrom, one of said
 85 lugs being provided with a sinuous duct extending around the perforation of said lug and connecting the upper and lower longitudinal ducts of the burner-body to provide a circuitous passage for the oil in its flow between said ducts, and a burner-tube arranged
 90 in the perforations of said lugs, and extending longitudinally of the burner-body, said burner-tube being in alinement with the valve-casting of the burner-body and receiving the vapor discharged therefrom. 95

2. The combination with a sad-iron, of a burner arranged therein and comprising an elongated body provided throughout its
 100 length and at its top and bottom with longitudinal oil-ducts, a feed-pipe connected at one end of said body and extending through the sad-iron to the exterior thereof, a reservoir connected to said pipe for supplying oil
 105 to the burner, an elongated valve-casting arranged at one end of the body of the burner and at a point beneath the bottom thereof, said casting being provided with a duct communicating with the lower duct of said body, a supply-valve arranged at the juncture of
 110 said ducts, a needle-valve also carried by said casting for controlling the vapor discharged therefrom, said supply and needle valves projecting through the sad-iron to the exterior thereof, perforated lugs carried by the burner-body and depending therefrom, one of said
 115 lugs being provided with a sinuous duct extending around the perforation of said lug and connecting the upper and lower longitudinal ducts of the burner-body to provide a circuitous passage for the oil in its flow between said ducts, and a burner-tube arranged
 120 in the perforations of said lugs and extending longitudinally of the burner-body, said burner-tube being in alinement with the valve-casting of the burner-body and receiving the vapor discharged therefrom. 125

Signed by us at Fort Wayne, Allen county, State of Indiana, this 14th day of February, A. D. 1901.

WILLIAM H. TARMON.
 FRANK M. THOMPSON.

Witnesses:

ADELAIDE KEARNS,
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