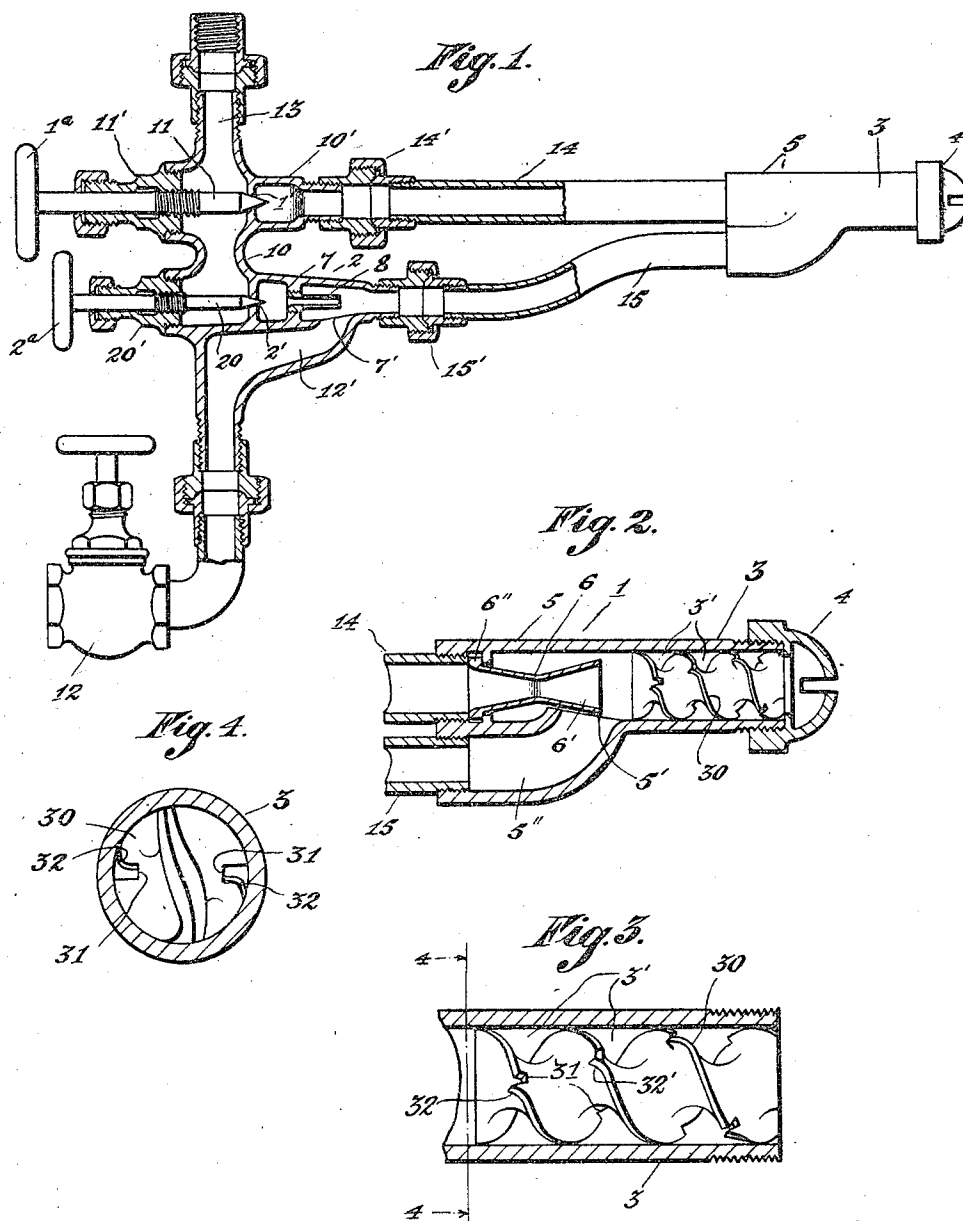


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LIQUID FUEL BURNER.
APPLICATION FILED MAR. 4, 1912.

1,059,611.

Patented Apr. 22, 1913.



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LIQUID-FUEL BURNER.

1,059,611.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, HENRY CLAY JORDAN, a citizen of the United States of America, and a resident of the city of Seattle, in the county of King and State of Washington, have invented certain new and useful Improvements in Liquid-Fuel Burners, of which the following is a specification.

My invention pertains to an improved burner of the above type embodying certain novel provisions for atomizing the fuel and regulating combustion.

The invention resides in the novel features and combinations of parts as set forth in the following description and succinctly defined in my annexed claims.

With reference to the accompanying drawing wherein similar reference characters designate corresponding parts throughout the several views: Figure 1 is a sectional side elevation of a burner embodying the features of my invention in such form as now preferred by me. Fig. 2 is a fragmentary section of the same extending through the atomizer and one of the injectors. Fig. 3 is a fragmentary section of the atomizer, and Fig. 4 is a section on line 4-4 of Fig. 3.

My improved burner comprises main and auxiliary injectors, as 1 and 2, and an atomizer embodying a tubular casing 3 having parallel passages 3' extending at opposite sides of a spiral partition 30 and communicating with a burner tip 4 connected with the casing. Each convolution of partition 3' is provided with by-passes or openings, as 31, which are combined with deflectors or lips, as 32, conveniently provided by bending the forward wall of each opening 31 laterally, and rearwardly with respect to tip 4, into the adjacent passage 3'.

Injector 1, as shown, comprises a shell 5, formed integral with casing 3, and a nozzle 6 having a flaring discharge termination 6' projecting over an intake port 5' in the side of the shell, while injector 2 comprises a shell 7, cast on a chamber or valve body 10, and a nozzle 8 seated in an internal flange of shell 7 and projecting over a side port 7' which communicates with an angular intake 12' cast on chamber 10 and connected with a valve 12 through which the liquid fuel is admitted to the burner from a source of supply, not shown.

Chamber 10, which is formed with an intake 13 for steam, or other heated fluid under pressure is provided with delivery ports 2', 1' communicating, respectively with shell 7 and with a nipple 10' cast on the chamber and connected, by means of a union 14' with a pipe 14 which is screwed into shell 5 and engages nozzle 6 to hold a shoulder 6'' there- 60 of against an internal flange of the shell. In this connection it will be observed that shell 5 is provided with a side intake 5'' 65 communicating with port 5' and having screw-threaded connection with a pipe 15 which is connected, by means of a union 15', with the delivery end of shell 7, whereby the liquid fuel admitted to shell 7 is directed to shell 5 for delivery through the passages 3' to the burner tip. 70

As illustrated in the drawing, chamber 10 is equipped with independent means for closing the ports 1', 2' in the form of needle valves 11, 20 which have screw-threaded connection with stuffing boxes 11', 20' on the chamber and are secured to hand wheels 1^a, 2^a. 75

Should it be desired to partly vaporize or raise the temperature of the liquid fuel flowing into shell 7 before it is brought under the influence of the fluid discharging from nozzle 6, valve 20 is opened for delivery of steam through nozzle 8. Further, it will be 80 observed that in operating the burner with valve 20 alone opened, and valve 12 adjusted accordingly, that a comparatively small fire can be maintained.

Steam discharging from the flared mouth of nozzle 6, catches the product drawn in through side port 5' and forces the same against partition 30, which through the provision of lips 32 and by-passes 31 effects a thorough intermingling of the oil and steam. 85 90 95

Having thus described my invention, what I claim as new and desire to secure by Letters Patent of the United States of America, is:

1. A liquid fuel burner comprising a valve body provided with a chamber provided with an intake port, main and auxiliary delivery ports in the side wall of said body, one end portion of said body being provided with an angular passage extending across the end of the chamber thereof and having one end portion extending inwardly toward and disposed forwardly of 100 105

said auxiliary port, a shell communicating with said auxiliary port and projecting laterally from said body and having an intake port communicating with the angular passage of the latter, a second shell, a tip on said second shell, a delivery conduit leading from said main port to said second shell, and a second delivery conduit leading from said first shell to said second shell.

10 2. A burner comprising a valve body having main and auxiliary delivery ports, valves for said ports, a nozzle connected with said auxiliary port, a shell inclosing said nozzle and provided in its side wall
15 with an intake port, a second shell having side and end intake ports and an internal shoulder, a nozzle in said second shell having an external flange seated against the shoulder thereof, a pipe forming a conduit
20 connected with the said main delivery port and threaded in the end intake port of said second shell and holding said last named nozzle seated, said last named nozzle extending over the side inlet port of said second shell, and means connecting the side intake
25 port of said second shell with said first shell.

3. In a liquid fuel burner, a shell having side and end inlet ports, a tubular casing
30 fixed to said shell in line with the end inlet thereof, a nozzle communicating with the end inlet port of said shell and having its

delivery end projecting inwardly over the side inlet port thereof, said nozzle having flared intake and delivery end portions. 35

4. In a liquid fuel burner, an atomizer comprising a casing, a spiral partition in said casing, means for directing liquid fuel in one end portion of said casing, said partition being formed with transverse passage-
40 ways, deflecting shoulders on said partition at the rear sides of the passage-ways thereof, said shoulders projecting toward the inlet-end portion of said casing, for directing
45 fuel through the passage-ways of said partition, and a tip on the opposite end portion of said casing.

5. In a liquid fuel burner, an atomizer comprising a casing, a spiral partition in said casing, means for directing liquid fuel
50 in one end portion of said casing, said partition being formed in its edge portion with notches constituting passage-ways, deflecting shoulders on the partition forwardly of the notches thereof for directing the fuel through
55 the latter, and a tip on the opposite end portion of said casing.

Signed at Seattle, Washington this 26th day of February 1912.

HENRY CLAY JORDAN.

Witnesses:

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