

(No Model.)

J. WILSON & A. MASON.  
HYDROCARBON BURNER.

Patented Feb. 18, 1890.

No. 421,642.

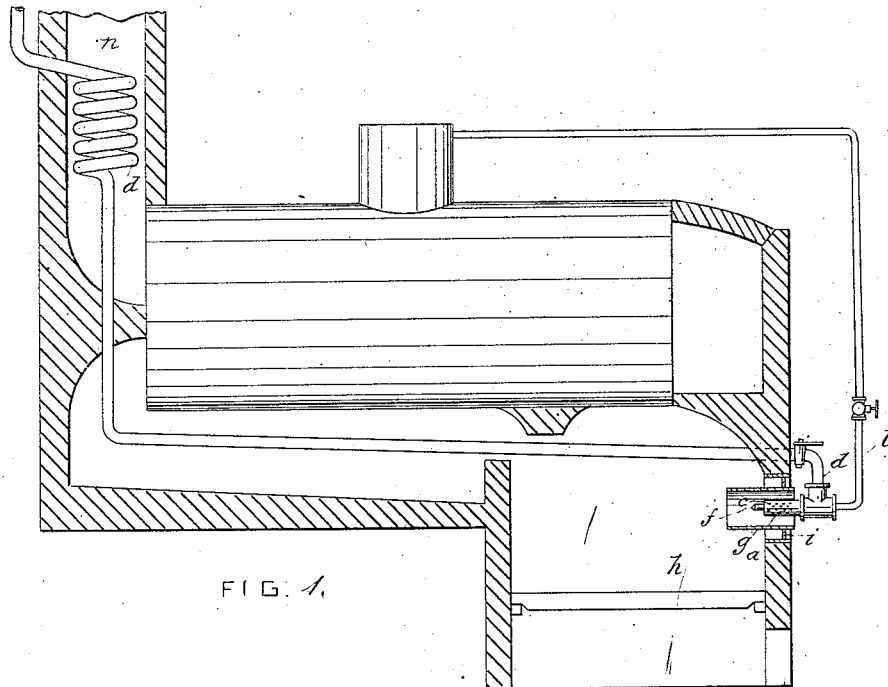


FIG. 1.

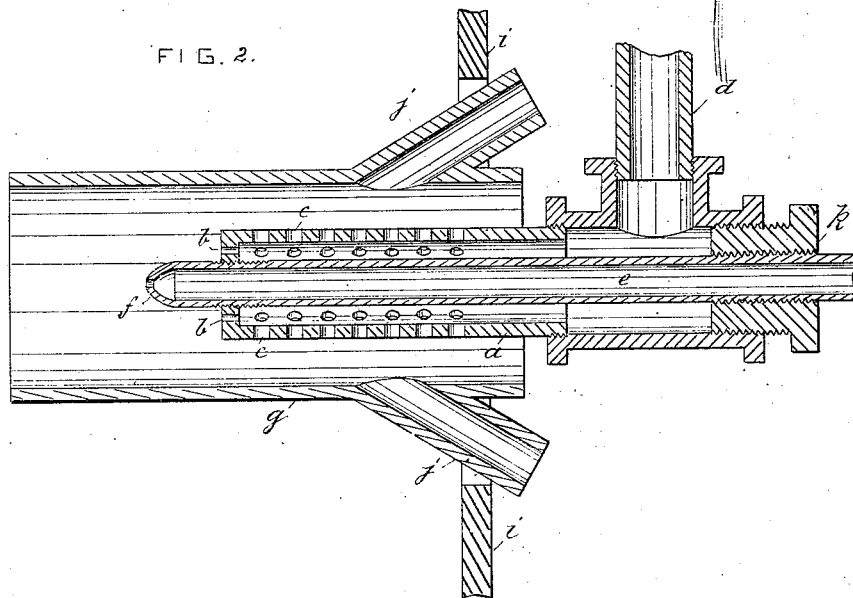


FIG. 2.

WITNESSES

*Wm. A. Lowe*  
*Thos. Morgan*

INVENTORS

*John Wilson*  
*Allen Mason*  
*By A. P. Thayer atty.*

# UNITED STATES PATENT OFFICE.

JOHN WILSON, OF NEW YORK, AND ALLAN MASON, OF BROOKLYN, ASSIGN-  
ORS TO HERBERT H. SANDERSON, TRUSTEE, OF NEW YORK, N. Y.

## HYDROCARBON-BURNER.

SPECIFICATION forming part of Letters Patent No. 421,642, dated February 18, 1890.

Application filed June 8, 1888. Serial No. 276,527. (No model.)

*To all whom it may concern:*

Be it known that we, JOHN WILSON and ALLAN MASON, citizens of the United States, and residents of New York city, in the county and State of New York, and Brooklyn, Kings county, New York, respectively, have invented certain new and useful Improvements in Hydrocarbon-Burners, of which the following is a specification.

10 This invention consists of improved contrivances for effecting more intimate and uniform admixture of the atoms of combustible elements in hydrocarbon-injecting apparatus, as hereinafter fully described, reference being made to the accompanying drawings, in which—

Figure 1 is a sectional elevation of a boiler-furnace having a hydrocarbon-burner of our improved contrivance; and Fig. 2 is a longitudinal sectional elevation of the burner on an enlarged scale, and with an additional device which we sometimes employ.

20 The improvements in this case are more particularly designed for burning hydrocarbon gas or vapor, or it may be other combustible gases, produced before and coming to the burner in a vaporous or gaseous condition, as from a retort, preferably arranged in the waste-heat passage, to and in which the 25 oil is fed and vaporized or gasified on its way to the burner. We provide a gas or vapor nozzle *a*, closed, or mainly so, at the inner end, though preferably having a few small direct issues *b* thereat, with other lateral 30 issues *c* through the sides along it for some distance back of the inner end, and also closed at the outer end, with which we connect the gas or vapor supply pipe *d*, and through which lengthwise we arrange the 35 steam or compressed-air jet pipe *e*, with its nozzle *f* projected a little beyond the inner end, and we arrange this nozzle in the air-inlet pipe *g*, suitably projected into the furnace-chamber *h* from the front plate *i*, for 40 the induction of the air by the suction of the steam-jet, so as to mix and combine effectually with the numerous fine jets of vapor or gas issuing from the sides of the gas-nozzle.

For the more effectual impingement of the air on the gas or vapor jets, we will in some 50 cases provide *Y* branches *j* to the air-inlet pipe for directing the incoming air obliquely on the gas or vapor jets, in which case the outer end of the air-inlet pipe may be closed or not, as preferred, by which oblique im- 55 pingement still more intimate admixture of the atoms is effected.

The injector-pipe *e* is preferably fitted through the inner end of the gas or vapor nozzle by a screw-joint, and in the outer end 60 of said nozzle it is fitted by a detachable bush *k*.

Steam is supplied to injector *e* from the boiler by the pipe *l*, and the hydrocarbon-vapor is in this example supplied through the retort-pipe *d*, coiled in the heat-flue *n* and extending along in the same and through the 65 furnace to the burner in any approved arrangement most suitable for vaporizing the oil, which is to be fed into it above the coil by any approved contrivance. The retort- 70 pipe is arranged in a continuous descending inclination to prevent the lodgment or deposition of carbon or other matters in it.

While steam will generally be used in the injector for producing the blast, it is to be 75 understood that compressed air may be employed, if desired. The retort-pipe may of course be coiled lower down—as, for instance, in the furnace-chamber—as well.

What we claim, and desire to secure by Letters Patent, is—

The combination, in a hydrocarbon-burner, of the steam or compressed-air pipe, the surrounding gas or vapor pipe having the lateral orifices, and the air-inlet tube open at 85 the outer end, having the additional diagonal *Y* branches, substantially as described.

Signed at New York city, in the county of New York and State of New York, this 12th day of April, A. D. 1888.

JOHN WILSON.  
ALLAN MASON.

Witnesses:

W. J. MORGAN,  
G. T. JANVRIN.