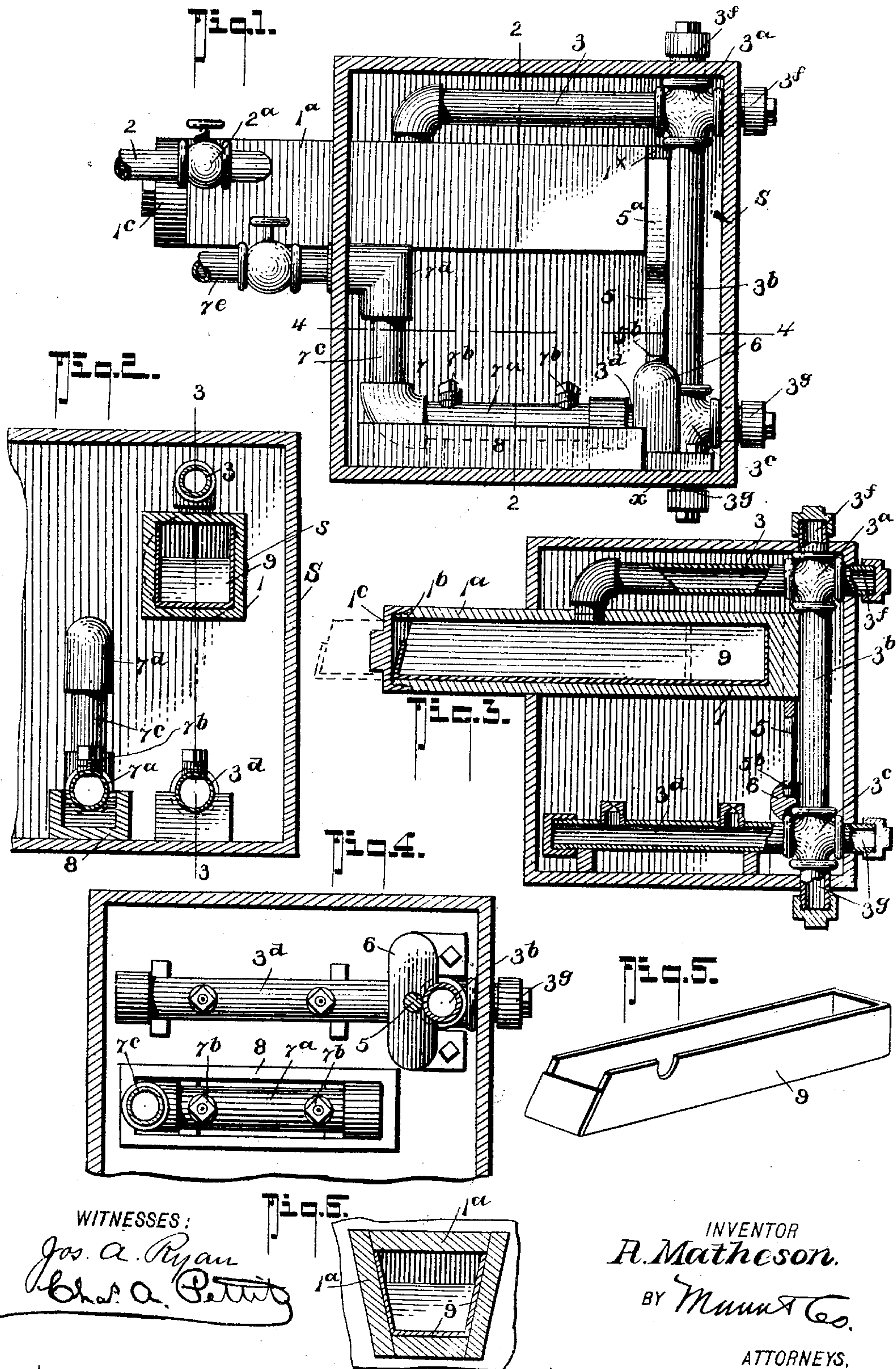


No. 765,027.

PATENTED JULY 12, 1904.

R. MATHESON.
HYDROCARBON BURNER.
APPLICATION FILED MAY 26, 1902.

NO MODEL.



UNITED STATES PATENT OFFICE.

ROBERT MATHESON, OF SAN DIEGO, CALIFORNIA.

HYDROCARBON-BURNER.

SPECIFICATION forming part of Letters Patent No. 765,027, dated July 12, 1904.

Application filed May 26, 1902. Serial No. 109,106. (No model.)

To all whom it may concern:

Be it known that I, ROBERT MATHESON, residing at San Diego, in the county of San Diego and State of California, have invented a new and Improved Hydrocarbon-Burner, of which the following is a specification.

This invention is in the nature of an improved means for vaporizing distillate oil and converting same into a gas in an economical, convenient, and effective manner; and in its general arrangement the said invention comprehends a novel construction of generating means, including a converter adapted to project into the stove or other casing in which the burner is held for the usual purpose, a jet-pipe forming an attached part of the converter, and a supplemental vaporizing means for initially heating the main converting or generating devices.

In its more complete nature my invention embodies a converting or generating chamber slidable within the stove or casing body, a jet-pipe for operating with said chamber at a point within the stove or casing, a valve-feed for the front or exposed end of the generating-chamber, and a residuum-collector detachably held within the converting or generating chamber and slidable into and out of the exposed end thereof, it also including a special arrangement of plugs in the jet or vapor-conveying pipes to provide for conveniently cleaning out the said pipes without the necessity of disconnecting them from each other or from the generating-chamber.

In its still more subordinate features my invention consists in certain details of construction and peculiar combination of parts, all of which will hereinafter be fully described, and specifically pointed out in the appended claims, reference being had to the accompanying drawings, in which—

Figure 1 is a side elevation of my invention, a portion of the stove-casing being shown to the more clearly illustrate the general arrangement of my invention. Fig. 2 is a transverse section of the same on the line 2 2 of Fig. 1. Fig. 3 is a vertical longitudinal section of the same on the line 3 3 of Fig. 2. Fig. 4 is a horizontal section of the same on the line 4 4 of Fig. 1. Fig. 5 is a detail view of the residuum-

collecting pan, hereinafter described. Fig. 6 is a cross-section of a modified form of the generating-chamber, hereinafter referred to.

In the practical construction my invention comprises an elongated, preferably rectangular, casing 1, which forms what I shall hereinafter term the "generating-chamber" or "converter," as the oil in its passage there-through is converted into a gaseous vapor. This casing when operatively applied to a stove, fire-pot, or other heat-collecting casing is projected into the casing S through a suitable openings in one end thereof, and the said converter 1 extends inwardly nearly the full width of the said casing S, as clearly shown in Fig. 1, by reference to which it will also be noticed one end of the casing 1 has an outwardly-projecting portion 1^a, open at its outer end for a purpose presently explained, and an opening designated by 1^b is normally held closed by a screw-cap 1^c. 2 represents the oil-feed pipe, which is provided with a needle-valve 2^a of any approved construction, and the said pipe joins with the end 1^a of the body 1, as shown.

A vapor-offtake pipe 3 communicates with the generating-chamber 1 inside of the stove body or casing, passes rearwardly over the top of the said chamber, and joins through an elbow union-coupling 3^a with the pendent pipe-section 3^b, which joins by the elbow-coupling 3^c with the lower or burner pipe 3^d, disposed in a horizontal plane under the generating-chamber, and the said pipe 3^d has a number of discharging jet-nozzles. The discharge-orifices are proportionate to the size of the generating-chamber, whereby to permit of a free flow of gas as fast as generated, and to reduce friction the bottom or threaded portion of the jet-nozzles are countersunk at a point near their outlet, and the said nozzles are also slightly countersunk on the top (see Fig. 3) to conveniently aid in cleaning the said jet-nozzles.

To provide for conveniently cleaning the pipes 3, 3^b, and 3^d, the elbow-couplings 3^a and 3^c have plugged openings 3^f 3^g, as shown, and so arranged that by the removal of said plugs a cleaning-brush or other implement can be readily inserted into said pipes.

The inner end of the converter 1 is supported on a standard 5, provided with a bifurcated portion 5^a, adapted to straddle a vertical flange 1^x on the rear end of the converter-body 1, and to provide for sustaining the said inner end in a proper plane the lower end of the standard terminates in a threaded shank 5^b for engaging a yoke-piece 6, bolted to the base member *w* of the stove-body and held to straddle the pipe-section 3^d and hold same, with the sections 3^b and 3, in a proper position relatively to the converter 1.

7 designates a supplemental vaporizing means consisting of a burner-pipe 7^a, disposed parallel with and adjacent the main burner-pipe 3^d and provided with a number of jet-nozzles 7^b, and said pipe seats in an oil-trough 8 and joins by the pipe connections 7^c 7^d with the valved oil-feed pipe 7^e, as shown.

9 designates a sheet-metal U-shaped pan, slidable into the open end of the converting-chamber 1. This pan extends the full length of the chamber 1 and serves to collect all the deposits or residuum within the said chamber, and by reason of such arrangement of parts the entire deposits within the chamber 1 can be conveniently removed by drawing the pan 8 out of the open end of the chamber 1 in a manner clearly understood from Fig. 3 of the drawings.

By providing a converting or generating chamber as described an important advantage is resultant thereof, as the pan, with the residue, can be easily removed without disorganizing any of the other parts. A formidable obstacle is thereby overcome, since asphaltum and other residue of oil when incrustated is hard to remove. In practice the pan 9 is made oil-tight to prevent oil from flowing into the generating-chamber between the pan and walls thereof.

By extending one end of the generating-chamber through the end of stove feed-pipe connections can be conveniently made and the generating-chamber or converter easily cleaned without removing the same from the stove.

By making the generating-chamber of a length to extend approximately the full width of stove-pot admits of the burner-pipe having a plurality of gas-jets, and thereby provide a flame the full width of the fire-box, with the result that the flame is evenly distributed throughout the stove or range, as the case may be.

In operation distillate or low-grade oil is first fed into the supplemental vaporizing burner-pipe and a quantity of oil permitted to accumulate in the oil-holder, in which the said supplemental burner seats, which is then forced to heat the said supplemental burner sufficient to generate gas in the said burner,

the jets of which discharge against the main generating devices. This in practice usually takes about three minutes, after which the oil-feed to the supplemental burner is turned off, the oil remaining in the said supplemental pipe being sufficient to supply gas enough to heat the main generator. After the latter is sufficiently heated oil is turned into the chamber 1, which immediately becomes vaporized and passes into the offtake or burner pipe 3^d. The supplemental vaporizing means are not used after the main generating means are started.

While I prefer to arrange the several co-operative parts as shown, they may be varied and modified in their detailed arrangement without departing from the scope of the appended claims. For example, instead of making the generator 1 of a square shape in cross-section, as shown in Figs. 1, 2, and 3, the same may be made triangular or cross-shaped, as shown in Fig. 6, and while I have not shown it when the latter form of the generator is used it is preferred that the feed-pipe 2 discharge into the top of the generator instead of at the side, as shown in the construction illustrated by Fig. 1.

The advantage in having the generator-chamber made trough-like, as shown in Fig. 6, is that it increases the inside area of the generator and also provides for obtaining the full benefit of the flame by reason of the said flame striking the inclined sides of said generator, and by having the pipe enter at the top the same will not interfere with the removing-pan.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

A hydrocarbon-burner, comprising in combination, with the fire-pot, a vaporizing-chamber, consisting of the closed casing held within the fire-pot and having a portion extended outside the pot, a removable closure for said extended portion, a collecting-pan within the chamber, an oil-feed communicating with the said casing, an offtake also communicating with the casing, said offtake including an upper horizontal pipe-section, a lower horizontal pipe, a vertical pipe, elbows connecting the vertical pipe with the horizontal pipes, and having hollow members extended beyond the fire-pot casing provided with removable plugs, the horizontal pipe having jet-burners held to discharge against the casing, and means for initially heating the said casing, substantially as shown and for the purposes described.

ROBERT MATHESON.

Witnesses:

GEO. W. HAZZARD,
J. H. SNYDER.