

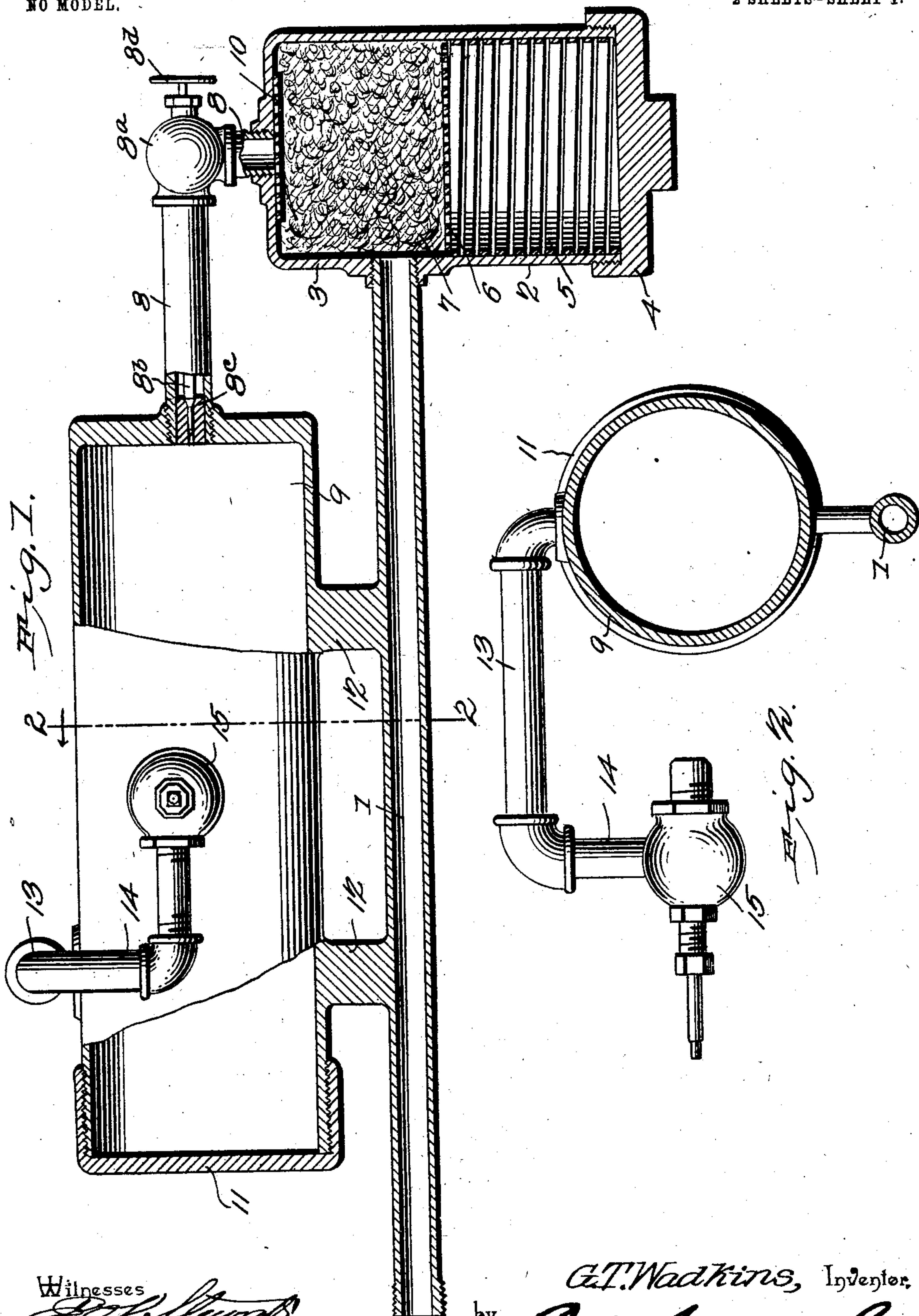
No. 721,761.

PATENTED MAR. 3, 1903.

G. T. WADKINS.
HYDROCARBON BURNER.
APPLICATION FILED MAY 14, 1902.

NO MODEL.

2 SHEETS—SHEET 1.



Witnesses
[Signature]
R. M. Tuott.

G. T. Wadkins, Inventor.
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Attorneys

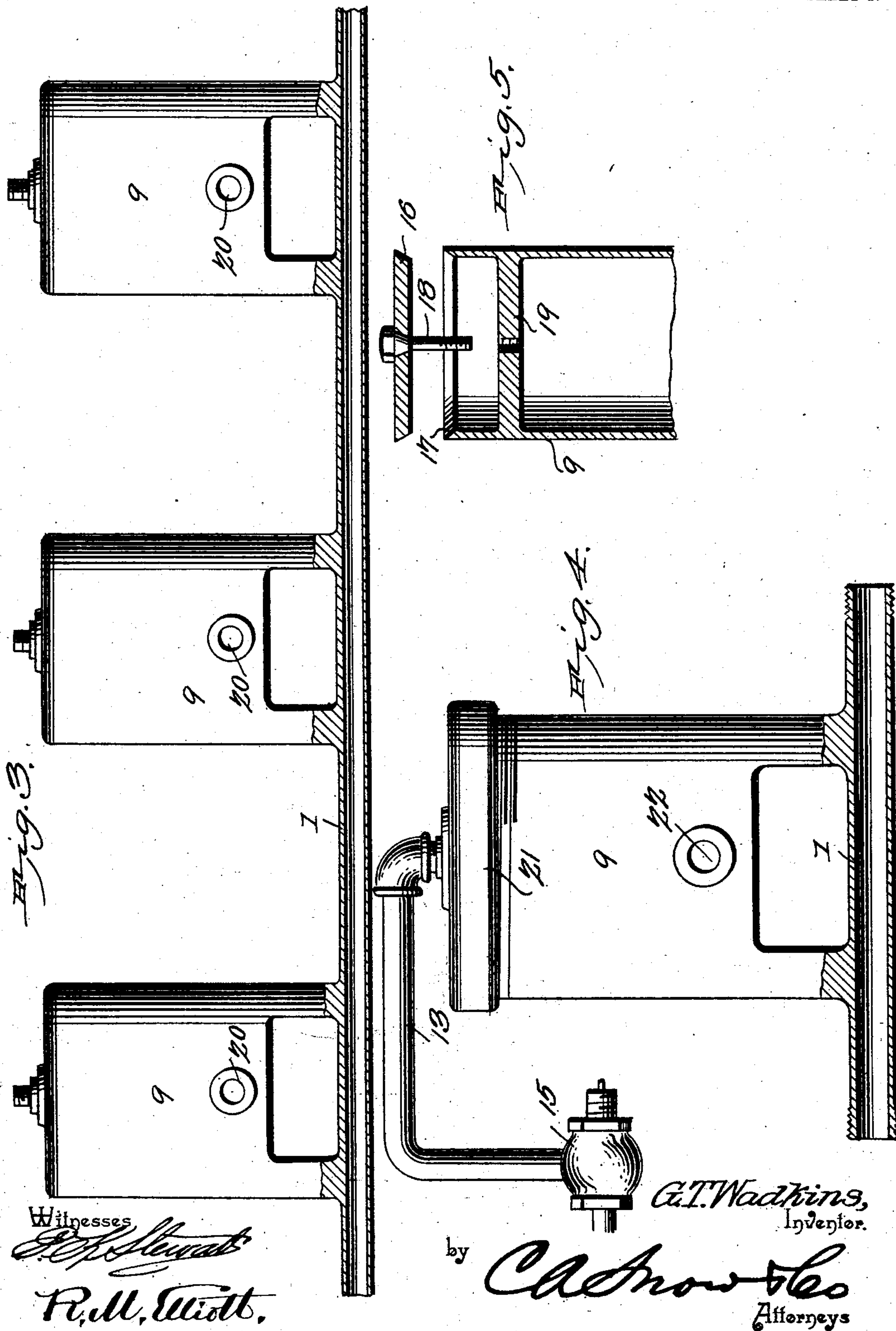
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UNITED STATES PATENT OFFICE.

GEORGE T. WADKINS, OF GALVESTON, TEXAS.

HYDROCARBON-BURNER.

SPECIFICATION forming part of Letters Patent No. 721,761, dated March 3, 1903.

Application filed May 14, 1902. Serial No. 107,341. (No model.)

To all whom it may concern:

Be it known that I, GEORGE T. WADKINS, a citizen of the United States, residing at Galveston, in the county of Galveston and State of Texas, have invented a new and useful Hydrocarbon-Burner, of which the following is a specification.

This invention relates to hydrocarbon-burners.

The object of the invention is to provide a burner of the character specified which shall be adapted for burning crude petroleum without smoking, as well as kerosene or gasolene; furthermore, in a ready, simple, and thoroughly feasible manner to eliminate matter contained within the oil which would tend to clog the gas-jet, thereby insuring free and uninterrupted use of the device.

With these and other objects in view, as will appear as the nature of the invention is better understood, the same consists in the novel construction and combination of parts of a hydrocarbon-burner, as will be hereinafter fully described and claimed.

In the accompanying drawings, forming a part of this specification, and in which like numerals of reference indicate corresponding parts, there are illustrated three forms of embodiment of the invention capable of carrying the same into practical operation, it being understood that the elements therein exhibited may be varied or changed as to shape, proportion, and exact manner of assemblage without departing from the spirit thereof, and in these drawings—

Figure 1 is a view in sectional elevation of the simplest form of embodiment of the invention. Fig. 2 is a view in transverse section, taken on the line 2 2, Fig. 1, and looking in the direction of the arrow thereon. Fig. 3 is a view in elevation, partly in section, showing a nest of burners. Fig. 4 is a view in side elevation of a slightly-modified form of burner. Fig. 5 is a detail view of the generator shown in Fig. 3.

Referring to the drawings, 1 designates a pipe constituting a heating-chamber, one end of which connects with a suitable source of supply of hydrocarbon. Secured to the other end of the heating-chamber is a separator 2, into which the hydrocarbon passes from the heating-chamber and where separation there-

from of sand, asphalt, or other objectionable matter that would have a tendency to clog the burner is effected. The separator comprises a body portion 3, having its lower end closed by a screw-threaded cap 4, and arranged within the lower portion of the separator is a spring 5, which is designed to support a foraminous metallic plate 6, upon which is disposed a bunch of steel wool, which operates as a filtering medium. Connecting with the top of the separator is one end of a pipe or conduit 8, carrying a valve-casing 8^a, the other end of said pipe being connected with a gas-generator 9, the intake-mouth of the pipe being covered by a foraminous plate 10 to prevent the steel-wool from entering therein.

The valve-casing carries a needle-valve 8^b, the inner end of which works in an orificed plug 8^c, disposed at the end of the pipe 8 within the generator, as shown in Fig. 1, the said needle-valve operating to control the amount of gas that the burner is to produce and also operates to cause the oil to be sprayed within the generator. The stem of the needle-valve projects through a stuffing-box on the valve-casing and carries a hand-wheel 8^d, by which it may be adjusted at will.

The generator 9, which may be of any preferred construction, has one end closed by a threaded cap 11 and is connected with the heating-chamber through the medium of lugs or legs 12, as shown in Fig. 1. From a point of cheapness and readiness of production it is preferred to have the generator and heating-chamber cast integral; but it is to be understood that these parts may be made as separate elements and then assembled and still be within the scope of the invention.

Connecting with the top of the generator is a pipe 13, preferably disposed horizontally, said pipe carrying a depending section 14, with which is associated the burner 15 of the ordinary needle-valve type. The jet portion of the burner is disposed opposite the generator and sufficiently close thereto to cause the flame to impinge against and around the generator, and not only operates to vaporize the oil contained therein, but also to heat the heating-chamber to a degree effective to cause it to perform its function. In the form of burner just described the length of the gen-

erator is disposed parallel with the heating-chamber, and the gas-burner is disposed intermediate of the ends of the generator. But a single burner is herein shown, it being understood, of course, that a plurality of burners may be employed and still be within the scope of the invention, and as this will be readily understood detailed illustration thereof is deemed unnecessary.

10 In the form of embodiment of the invention shown in Figs. 3 and 5 a series of generators is associated with the heating-chamber, in this instance three, it being understood that this number may be increased if found necessary or desirable.

15 Instead of having the generator 9 with its length arranged parallel with the heating-chamber it is disposed at right angles thereto, and instead of employing threaded caps for closing the upper ends of the generators, as shown in Fig. 1, the said ends may be closed by tapered plugs 16 to fit similarly-shaped ground or turned seats 17 in the upper end of the generators, bolts 18, engaging spiders 19 25 in the generators, serving to hold the plugs in place. In these last-described figures the burner and separator are omitted, the point of connection of the separator being shown at 20, while the burner may be connected 30 with the generator at any desired point, either as shown in Figs. 1 and 2 or otherwise.

In the form of embodiment of the invention shown in Fig. 4 the length of the generator is shown as disposed at right angles to the heating-chamber, and its upper end is closed 35 by a screw-cap 21, with which the burner-carrying pipe 13 is connected. The point of connection for the separator with the generator is indicated at 22, the separator being omitted, 40 as its manner of disposition with relation to the generator will be readily understood.

The operation of the device is as follows: Oil passes through the heating-chamber to the separator, thence to the generator, and thence 45 to the burner, where it is ignited and burns, the sprayed oil being projected against the outer surface of the generator. In a short time the generator becomes highly heated, so that the entering oil is immediately flashed 50 into vapor, and a gas is thus fed to the burner, the flame from which laps around the generator and the heating-chamber. After the latter is heated the oil passing therethrough is thinned or rendered more fluid by the action 55 of the heat, so that when it enters the separator any contained shale, sand, or asphalt will

settle through the plate 6 to the bottom of the separator, the oil being further relieved of any objectionable matter by passing through the steel-wool. By this simple step of heating 60 the oil initially to a point to cause it to part with its heavy products that which enters the generator is practically pure, and as it is flashed or vaporized therein a gas only escapes through the burner, so that all danger of the 65 escape-orifice becoming clogged by accumulated gas-coal will be positively obviated. The amount of gas that the burner is to produce is determined by regulating the needle-valve 8^b. 70

The burner of this invention is adapted for use in connection with furnaces, cooking-stoves, and the like and may be readily associated therewith without necessitating any radical change in the structural arrangement 75 of such structures.

In practice the generator will not require cleaning; but the separator will, and to effect this the cap 4 is removed, thus to permit escape of accumulated matter. Should it be desired to cleanse the steel-wool or supply a 80 fresh charge, this may readily be effected by withdrawing the spring 5 and plate 6 and then removing the wool.

Having thus fully described my invention, 85 what I claim as new, and desire to secure by Letters Patent, is—

1. A hydrocarbon-burner comprising a heating-chamber, a separator communicating therewith, filtering means disposed within 90 the separator, a foraminous spring-pressed support for the filtering means, a generator, a conduit connecting the separator and the generator, means disposed over the inlet end of the conduit to preclude entrance of the 95 filtering means therein, and a burner carried by the generator and having its jet or discharge end disposed to cause the products of combustion to impinge thereagainst.

2. In a hydrocarbon-burner, the combination 100 with a heating-chamber and a generator provided with a burner, of a separator, a spring disposed therein, a foraminous plate supported by the spring, and a filtering agent 105 supported by the plate.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

GEORGE T. WADKINS.

Witnesses:

D. D. McDONALD,
JOHN T. WHEELER.