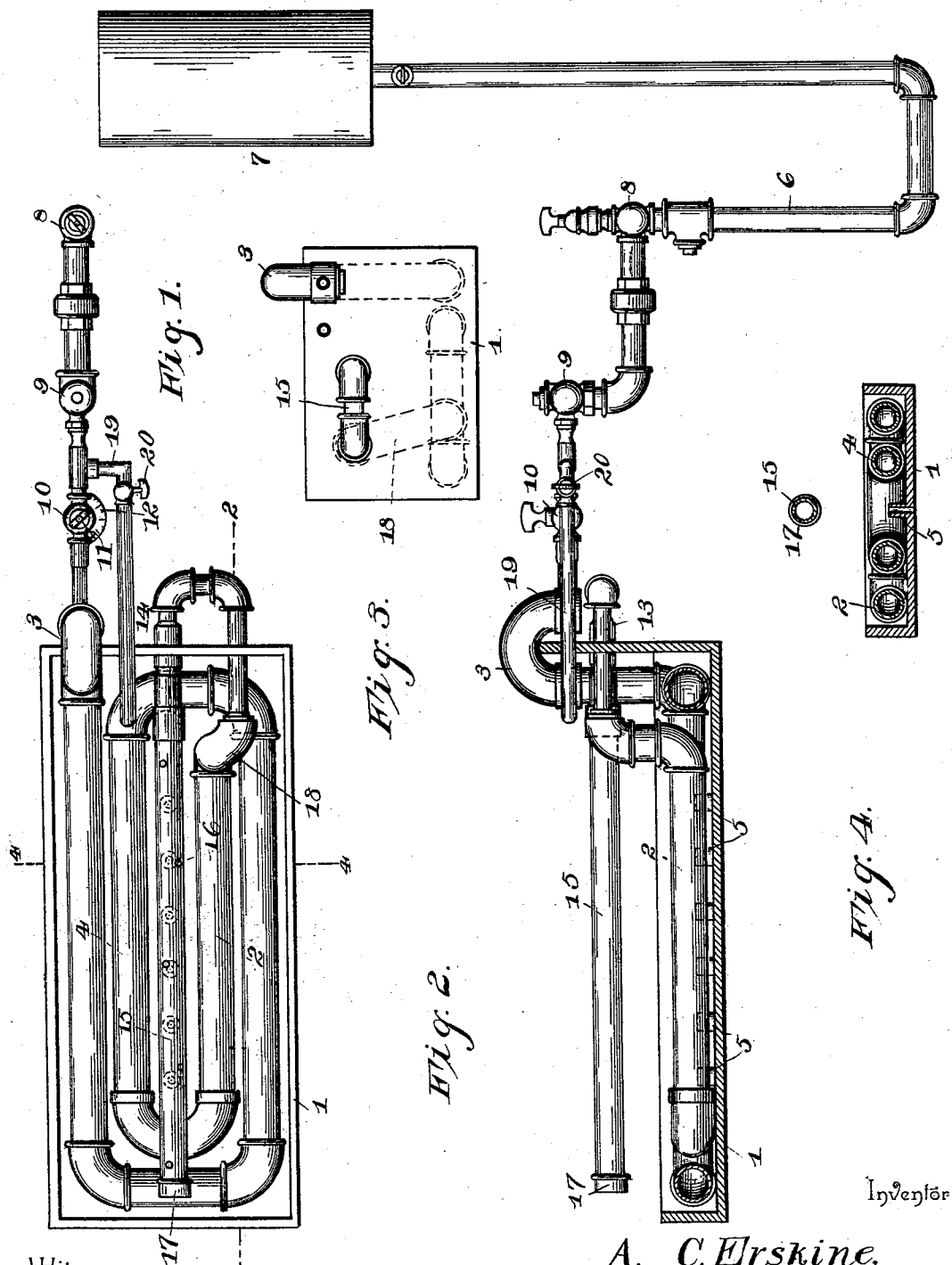


(No Model.)

A. C. ERSKINE.
GAS GENERATOR.

No. 508,001.

Patented Nov. 7, 1893.



Inventor

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Witnesses
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GAS-GENERATOR.

SPECIFICATION forming part of Letters Patent No. 508,001, dated November 7, 1893.

Application filed June 19, 1893. Serial No. 478,124. (No model.)

To all whom it may concern:

Be it known that I, ABNER C. ERSKINE, a citizen of the United States, residing at Bowling Green, in the county of Wood and State of Ohio, have invented a new and useful Gas-Generator, of which the following is a specification.

My invention relates to a hydrocarbon burner or gas generating apparatus for use in connection with burners for cooking and heating stoves, &c., the object in view being to provide a simple and efficient construction in which the parts are so disposed as to reduce the danger of explosion to a minimum and insure a complete combustion of the fuel.

Further objects and advantages of this invention will appear in the following description, and the novel features thereof will be particularly pointed out in the appended claim.

In the drawings: Figure 1 is a plan view of a burner provided with gas-generating apparatus embodying my invention. Fig. 2 is a longitudinal section of the same upon the line 2—2 of Fig. 1. Fig. 3 is an end view. Fig. 4 is a transverse section on the line 4—4 of Fig. 1.

Similar numerals of reference indicate corresponding parts in the several figures of the drawings.

1 designates a burner pan, in which is arranged, in proximity to its bottom and parallel therewith, a generator pipe 2, which enters the pan by passing over the front end thereof, at which point it is provided with an elbow 3. The generator pipe descends parallel with the front side of the pan to a point near the bottom thereof and below the plane of the upper edges, thence extends longitudinally parallel with the side of the pan, across the same at its rear end, and returns to the front parallel with the other side. This completes the outer loop or coil of the pipe within which, and in the same plane therewith, is arranged a smaller loop or coil 4, the interval between the adjacent sides of the arms of the inner loop being slightly greater than the diameter of the generator pipe. A series of air-inlet tubes 5 are arranged vertically at the center of the bottom of the pan in a series which is parallel with the sides of the interlocked loops of the generator pipe, whereby they extend up

between the adjacent sides of the arms of the inner loop. The upper ends of these inlet tubes are approximately in the plane of the center of the generator pipe, or the inlet tubes terminate about halfway between the planes of the upper and lower sides of the loops.

6 represents the supply pipe or feeder, which is connected at one end to the reservoir 7, and at the other end to the outer arm of the elbow of the generator pipe. This supply pipe or feeder is provided, at 8, with a valve or cutoff of the ordinary or any preferred construction, and at 9 with a check valve to prevent the return pressure of the oil, such check valve being arranged in an elbow of the supply pipe or feeder.

10 represents an index valve, carrying an index 11, traveling over a dial 12, whereby the operator is enabled to gage the amount of fuel which is fed to the generator.

Connected to the inner end of the generator pipe, or to the end of the free arm of the inner loop, is a reduced conductor pipe 13, which extends beyond the front wall of the pan and is provided at its extremity with a rearwardly-extending conical reducer 14, which is fitted axially in the front end of the horizontally-disposed burner tube 15, whereby the vapor is projected the entire length of the burner tube. The burner tube is provided in its upper side with a series of burner openings or perforations 16, which are arranged out of alignment and upon a zigzag line, whereby they are located alternately near opposite sides of the tube, as shown clearly in Fig. 1. The free end of the burner tube is fitted with a cap 17, which is removable to give access to the interior of the tube. The burner tube is arranged above the plane of the generator pipe and above the plane of the upper edge of the pan, the conductor pipe 13 being provided with an elbow 18, to bring said pipe and the reducer to the plane of the burner tube.

The supply pipe is tapped in front of the index valve by an initial feed pipe 19, which extends into the pan and is provided with a cutoff 20.

This being the construction of my improved apparatus, the operation thereof is as follows: The index valve being closed to prevent the fuel from flowing into the generator, the valve

8 is opened and a small quantity of fuel is allowed to flow through the initial feed pipe 19, into the pan, the supply being checked before the level of the surface of the fuel reaches the upper ends of the air-inlet tubes. This oil is now ignited and allowed to burn to heat the generator, and after a sufficient time has elapsed the index valve is turned to admit fuel to the generator. The oil is vaporized in its passage through the generator pipes, and is introduced into the burner tube in a reduced or condensed form. The gas is ignited as it leaves the burner tube.

From the above description it will be seen that the generator is located below the level of the burner tube, and hence the excessive heating of the generator pipes is avoided and the fuel is vaporized without the risk of explosion attending an apparatus in which the generator is above or in close proximity to the burner. Furthermore, the initial heating of the generator pipe, owing to the arrangement of the latter in a common plane and in proximity to the bottom of the pan, may be accomplished with a minimum expenditure of oil.

A further advantage of the construction described resides in the arrangement of the air-inlet tubes directly beneath the burner tubes and between the arms of the inner loop of the generator pipe, whereby the air is heated as it rises and hence does not chill the burner.

Various changes in the form, proportion, and the minor details of construction may be resorted to without departing from the prin-

ciple or sacrificing any of the advantages of this invention.

Having described the invention, what is claimed is—

A hydrocarbon gas generator and burner having an igniting pan provided at its longitudinal center with a series of air inlet tubes arranged vertically, with their terminals above the plane of the bottom of the pan, a generator disposed within the pan below the plane of its upper edge, and consisting of a series of horizontal connected parallel sided loops, the sides of which are arranged in a common plane and are parallel with the series of inlet tubes, a horizontal burner tube, provided in its upper side with apertures, and arranged parallel with and vertically above the series of inlet tubes, and above the plane of the generator, a conductor connected to one end of the generator pipe and provided with a conical reducer which is fitted axially in the end of the burner tube whereby vapor is projected the entire length of the latter, and a supply pipe connected to the other end of the generator pipe and provided with suitable controlling valves and a connected tube to supply oil to the igniting pan, substantially as specified.

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

ABNER C. ERSKINE.

Witnesses:

B. L. ABBOTT,
FRANK A. REID.