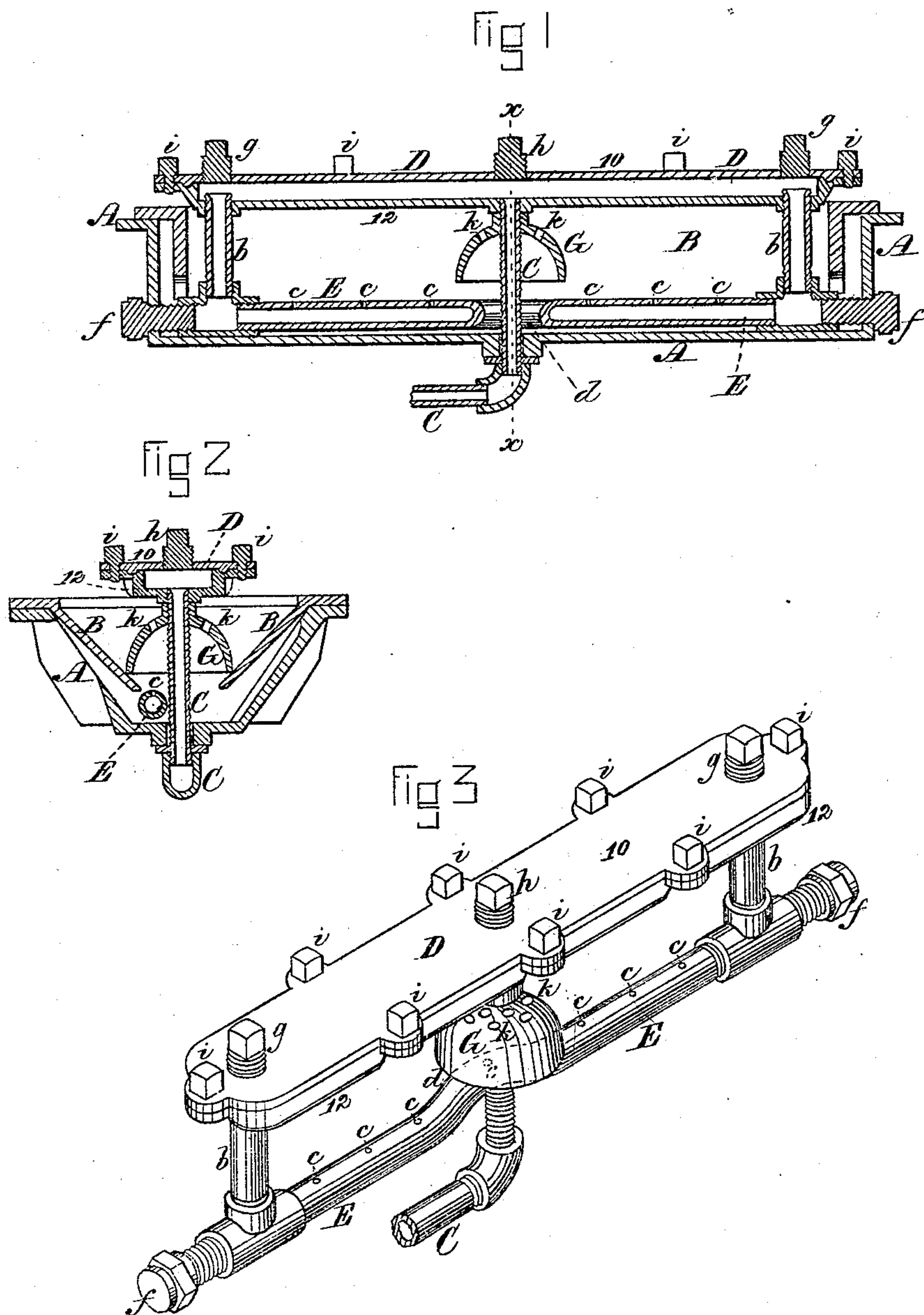


(No Model.)

P. MARTIN.
VAPOR STOVE.

No. 275,058.

Patented Apr. 3, 1883.



WITNESSES

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UNITED STATES PATENT OFFICE.

PEARL MARTIN, OF MEDFORD, MASSACHUSETTS.

VAPOR-STOVE.

SPECIFICATION forming part of Letters Patent No. 275,058, dated April 3, 1883.

Application filed December 11, 1882. (No model.)

To all whom it may concern:

Be it known that I, PEARL MARTIN, a citizen of the United States, residing at Medford, in the county of Middlesex and State of Massachusetts, have invented certain Improvements in Stoves or Furnaces for Burning Crude, Refined, or Unrefined Hydrocarbon and other Oils, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, making part of this specification, in which—

Figure 1 is a longitudinal vertical section through the fire-pot of an oil stove or furnace having my improvements applied thereto. Fig. 2 is a transverse vertical section on the line xx of Fig. 1. Fig. 3 is a perspective view of my improvement detached.

My present invention relates to an improvement on that class of oil-stoves in which the oil is converted into gas in a generator placed above and communicating with the perforated pipe from which the jets of flame issue.

Heretofore the generator has usually been composed of a single pipe or series of pipes, within which the oil has been converted into gas by the heat of the flame issuing from the burners beneath; but these pipes, which are of small diameter, are objectionable for the reason that they soon become clogged and obstructed by the residuum of the oil, while they fail to present as large a surface area to the flame as is desirable to insure the rapid generation of gas.

To overcome these difficulties is the object of my invention, which consists in the combination, with the fire-pot, of a vertical supply-pipe extending up through its bottom, a perforated pipe extending horizontally along the bottom of the fire-pot, and having upwardly-projecting branches, and a flattened hollow gas-generating chamber communicating with the supply-pipe and the perforated pipe, and having an extended surface area on its underside, whereby an increased heating-surface is presented to the flame, and the unconsumed gases at the same time collected and retained until ignited and consumed.

My invention also consists in the combination, with the perforated pipe at which the gas is burned, of an inverted perforated cup located

beneath the gas-generator and over one of the perforations of the pipe, for the purpose of collecting and retaining a large body of flame in close proximity to the perforated pipe, in order to insure the automatic relighting of the gas issuing from the perforations of the pipe in case the jets of flame issuing therefrom at either side of the inverted cup should become extinguished by a sudden draft of air when the supply of oil is partially turned off to keep the fire low.

In the said drawings, A represents the fire-pot of an oil stove or furnace, which is of rectangular form, the sides being inclined from the top down toward the center, as shown. This fire-pot, with its downwardly-inclined plates or deflectors B, is, however, constructed substantially like that shown in Letters Patent granted to me May 16, 1882, and, as it forms no part of my present invention, will not be further described.

C is the supply-pipe, which communicates with an elevated oil-reservoir, (not shown,) and extends up through the bottom of the fire-pot A to near the level of its upper edge, where it communicates with a hollow gas-generating chamber or receptacle, D, of the form seen in Fig. 3, which extends horizontally in the direction of the length of the fire-pot and communicates at its opposite ends with the vertical branches or extensions $b\ b$ of a pipe, E, which extends longitudinally along the bottom of the fire-pot at a short distance therefrom, and is provided with a series of perforations, c , for the escape of the gas generated from the oil, the generator D being arranged directly over and parallel with the perforated pipe E, from which the jets of flame issue, in order to receive the heat therefrom. The pipe E is curved at the center in the arc of a circle, as seen at d , to enable it to pass around the vertical portion of the supply-pipe C, and at each end of the pipe E is a screw plug or cap, f , by removing which access is afforded to the interior of the pipe E, to enable it to be cleansed when required. The generator D is also provided on its upperside with three screw-plugs, $g\ g\ h$, the plugs g being located one over the upper end of each branch pipe b , and the plug h being immediately over the upper end of the

supply-pipe C, and by removing these plugs convenient access is afforded to these pipes when it is desired to cleanse them. The generator D is made in two portions, the upper or removable portion, 10, being secured to the lower portion, 12, by means of a series of screw-bolts, *i*, a suitably-packed joint between the two portions preventing leakage, and by thus making the upper portion of the generator removable its interior can be readily exposed and the operation of cleansing it of the residuum of the oil or other obstructing substance thus greatly facilitated. The ends of the branch pipes *b b* where they enter the generator D are slightly raised above its bottom, as seen in Fig. 1, in order to prevent any thick residuum which may lie on the bottom of the generator from flowing down into the pipe E.

It will be seen that the flattened form of the hollow generator D causes its under side to present a larger and much more extended surface area to the action of the flame rising from the perforated pipe E beneath than is the case where a round pipe is employed for the purpose, thereby retaining the flame longer in contact with the generator and enabling the oil to be converted into gas in a much more rapid and perfect manner than heretofore, while the extended heating-surface thus interposed between the flame and the chimney-flue acts as a retainer to collect and retard the upward flow of the unconsumed gases and retain them in contact with the flame until they become thoroughly ignited and entirely consumed, thus preventing them from escaping into the chimney-flue before becoming ignited, whereby the heating capacity of the stove is greatly increased and waste of oil avoided. The width of the generator D also enables it to serve as a guard to prevent any sudden draft of air from above, caused by removing the lids or covers of the stove or otherwise, from extinguishing the fire, while it also holds the hottest portion of the flame down so close to the perforations *c* of the pipe E that should a jet or jets of flame become extinguished they will be in most cases instantly relighted, as desired. To provide, however, a more certain and reliable means of relighting the gas issuing from the perforations *c* in case it should become extinguished, I employ an inverted perforated cup, G, which is located beneath the generator D and over the perforation *c* at the center of the curved portion *d* of the pipe E, the vertical portion of the supply-pipe, which is provided with a screw-thread, passing up through the center of the cup G and serving to support the same, as seen in Figs. 1 and 2. The gas, as it issues from the perforation *c* beneath the cup G, rises into and fills the latter, becoming ignited therein, and burning up through the perforations *k*, a large body of flame being thus collected within the cup G and retained thereby in close proximity to the perforated pipe E, so that in case the jets of flame issuing from the perforations *c* on either side of the cup G

should become extinguished by a sudden draft of air when the supply of oil is partially turned off to keep the fire low, they will be instantly relighted by contact with the flame in the cup G; and it will be seen that this body of flame, on account of its large size and the protection afforded by its surrounding cup G, is free from liability to be extinguished by a current of air, which would at once extinguish the small jets of flame issuing from the perforations *c* on either side of the cup G, and consequently the liability of the fire in the stove becoming entirely extinguished, which, if unnoticed, would result in the escape of oil from the perforations *c*, and the flooding of the fire-pot is effectually prevented and much inconvenience thereby avoided.

The generator D, on account of its shape and extended area, is not liable to become obstructed by the residuum of the oil or hydrocarbon fluid, as is the case with the ordinary gas-generating pipe, and a source of much trouble and annoyance is consequently removed.

I lay no claim, broadly, to a gas-generator arranged above the perforated pipe or burner of an oil-stove, and adapted to receive the oil and cause the same to be converted into gas before reaching the burner or perforated pipe; but

What I claim as my invention, and desire to secure by Letters Patent, is—

1. In an oil stove or furnace, the combination of the fire-pot A, the vertical supply-pipe C, extending up through the bottom of the fire-pot, the perforated pipe E, extending horizontally along the bottom of the fire-pot, and having upwardly-projecting branches *b b*, and the flattened hollow gas-generating chamber D, communicating with the pipe C and the perforated pipe E, and having an extended surface area on its under side, whereby an increased heating-surface is presented to the flame, and the unconsumed gases at the same time collected and retained until ignited and consumed, all constructed and arranged to operate substantially in the manner and for the purpose set forth.

2. In an oil stove or furnace, the combination, with the perforated pipe E, and the gas-generating chamber D, of an inverted perforated cup, G, located beneath the gas-generator and over one of the perforations *c* of the pipe E, for the purpose of collecting and retaining a large body of flame in close proximity to the perforated pipe E, in order to insure the automatic relighting of the gas issuing from the perforations of the pipe in case the same should be extinguished by a sudden draft of air, substantially as described.

Witness my hand this 6th day of December, A. D. 1882.

PEARL MARTIN.

In presence of—

P. E. TESCHEMACHER,
W. J. CAMBRIDGE.