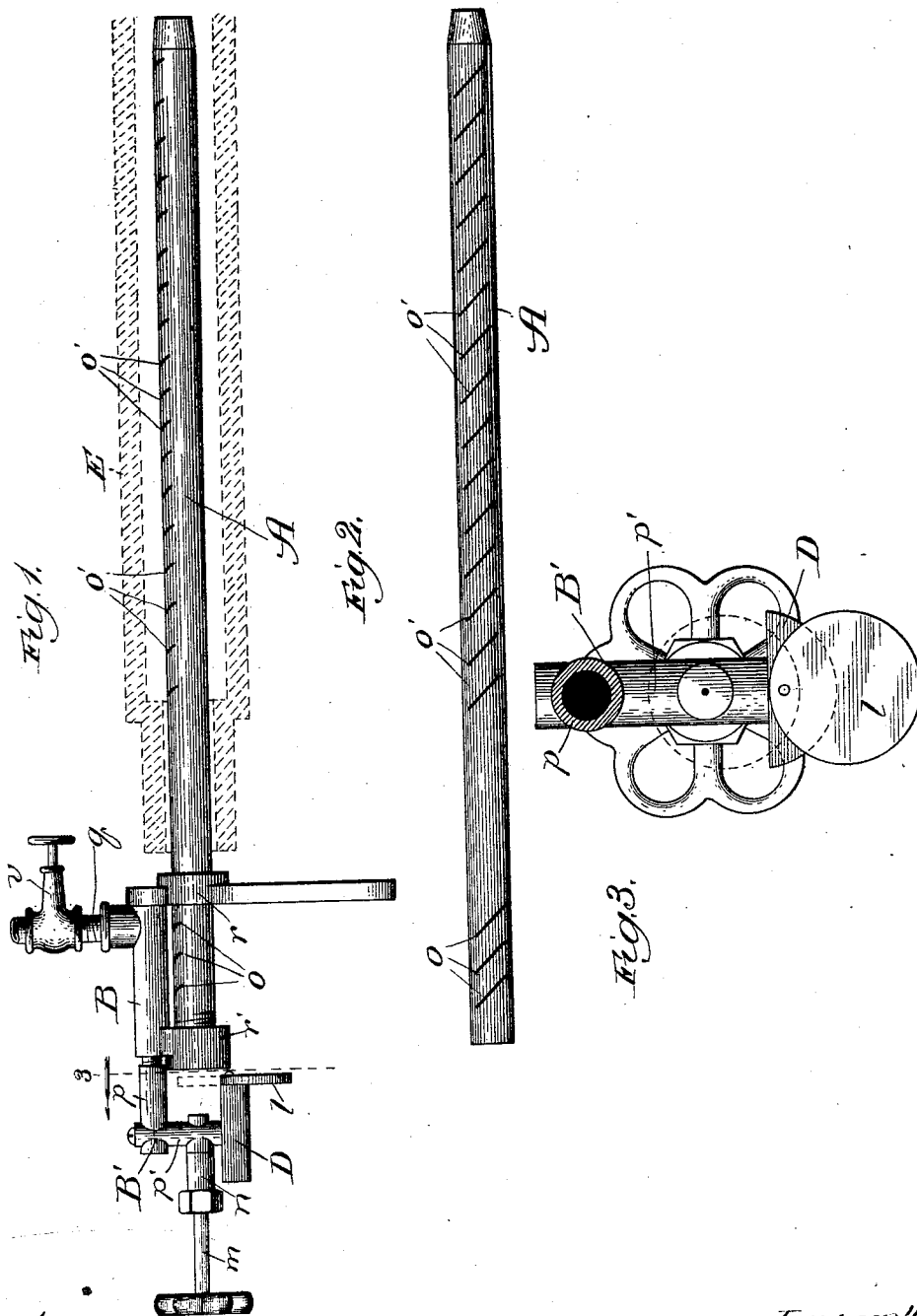


(No Model.)

P. H. NELSON.
COMBINED GAS GENERATOR AND HEATER.

No. 480,436.

Patented Aug. 9, 1892.



Witnesses:
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UNITED STATES PATENT OFFICE.

PETER H. NELSON, OF CHICAGO, ILLINOIS, ASSIGNOR TO THE S. H. SINCLAIR COMPANY, OF SAME PLACE.

COMBINED GAS GENERATOR AND HEATER.

SPECIFICATION forming part of Letters Patent No. 480,436, dated August 9, 1892.

Application filed March 1, 1892. Serial No. 423,358. (No model.)

To all whom it may concern:

Be it known that I, PETER H. NELSON, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a new and useful Improvement in a Combined Gas Generator and Heater, of which the following is a specification.

My invention relates to an improvement in the class of devices used for heating purposes and to that end employing fluid fuel, usually a product of petroleum and commonly gasoline, by first generating gas therefrom and burning the gaseous product to produce heat for application to the twofold purpose of continuing the gas-generation and heating the object for use with which the device is provided.

The object of my invention is to provide an apparatus in the class referred to of exceptionally simple and inexpensive construction, but which shall at the same time be especially effective in its twofold purpose.

In the accompanying drawings, Figure 1 shows my improved device entire in sectional elevation, with a roller, represented by dotted lines, surrounding the burner as the object to be heated therefrom. Fig. 2 is a plan view of the continuous tube forming the two gas-burners, the one for operating the generator and the other for heating the roller. Fig. 3 is a view taken on line 3 in Fig. 1 to represent the kindling-cup, showing an adjustable deflector detail, with which it should be provided, at one end.

A is a tube closed at one end and open at its opposite end, toward which it carries the two bearings *r* and *r'*, the former of which may afford means for attaching the apparatus in place (as upon an ironing-machine, not shown) and both affording supports for the opposite ends of the generator-chamber B, shown as of tubular form, with the supply-pipe *q* leading into its upper side from a holder (not shown) for the liquid fuel (gasoline or other suitable form of hydrocarbon) to be burned and which may be thus fed to the generator by gravity, the supply being controlled by a valve *v* in the pipe *q*. The generator B is thus supported lengthwise of and directly over the tube A between its support *r* and open end. In the upper side of the

tube A below the generator are openings *o* for the egress of the gas generated, as hereinafter described, the form of the openings being preferably that of slits, which should extend diagonally across the top of the tube to attain the greater length without, to that end, being extended too far down on the opposite sides of the tube. An elbow extension B' is fastened at one branch *p* to the open end of the generator B and has a nipple *n* extending from the lower end of its depending branch *p'* in horizontal line with the open end of the tube A, which nipple terminates at its inner end in the usual aperture for the discharge of the contents of the vaporizer B and contains a needle-valve *m* for controlling such discharge through the said aperture. On the lower end of the branch *p'* is the kindling-cup D, which should be provided on its end adjacent to the open end of the tube A with a pivotal deflector *l*, adapted to be turned up to cover the open end of the tube, when desired, from its normal position of uncovering that end.

The apparatus is operated as follows: The valve *m* is opened to permit a kindling quantity of the liquid fuel to discharge into the cup D from the generator B, the deflector *l* having been previously adjusted into the dotted position of covering the open end of the tube A to obstruct the discharge into the tube of the gasoline and deflect it into the cup. When the desired quantity has been introduced into the kindling-cup, the supply is shut off, the deflector turned down to the position illustrated by the full-line representation, and the contents of the cup are ignited. The flame of the burning fuel in the cup envelops the point of the valve *m*, heating it sufficiently to cause it to gasify the gasoline that surrounds it. On then opening the valve *m* the gaseous product blows into the tube A and through the openings *o*, at which it is ignited, the flame striking the generator B above it and thenceforward supplying the heat for generating the gas, which emerges from the valve *m* as the fuel. Soon after the apparatus has been thus started it will generate sufficient gas to supply the burner proper, formed by the continuation of the tube A from the generator-burner portion A' thereof

and provided with burner-openings *o'*, like those in the generator-burner *A'*.

The object to be heated is indicated as the roller *E* of an ironing-machine, but merely by way of example, for it may be a glue-pot or any other object to be heated by the burner.

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

1. In a combined hydrocarbon-gas generating and heating apparatus, the combination of a tube forming toward one end the heating-burner and toward its opposite end the generating-burner, a generator surmounting the tube at the end thereof, forming the generating-burner and having its discharge-opening in line with the open end of the said tube, and a valve for controlling the discharge from the said opening, substantially as described.

2. In a combined hydrocarbon-gas generating and heating apparatus, the combination of a tube forming toward one end the heating-burner and toward its opposite end the generating-burner, a generator surmounting the tube at the end thereof, forming the generating-burner and having its discharge-opening in line with the open end of said tube, a valve for controlling the discharge from the said opening, and a kindling-cup supported underneath the valve, substantially as and for the purpose set forth.

3. In a combined hydrocarbon-gas generating and heating apparatus, the combination of a tube *A*, closed at one end and open at its opposite end, a series of burner-openings *o* in the tube toward its open end and a series of

burner-openings *o'* therein toward its closed end, a generator *B*, supported on the tube *A* over the openings *o* and having an elbow extension *B'*, provided with the generator discharge-opening in line with the open end of the tube *A*, a needle-valve *m* for the said discharge-opening, and a kindling-cup *D* on the lower end of the said extension below the point of the valve, substantially as and for the purpose set forth.

4. A combined hydrocarbon-gas generating and heating apparatus comprising, in combination, a tube *A*, closed at one end and open at its opposite end, a series of burner-openings *o* in the tube toward its open end and a series of burner-openings *o'* therein toward its closed end, a generator *B*, into which leads the supply-pipe *q* and supported in bearings *r* and *r'* on the tube *A* over the series of openings *o* and having an elbow extension *B'*, formed with the branch *p* and depending branch *p'*, having the generator discharge-opening in line with the open end of the tube *A*, and a nipple *n*, containing a needle-valve *m*, controlling the said discharge-opening, and a kindling-cup *D*, supported on the lower end of the branch *p'* and provided with an adjustable deflecting-plate *l*, the whole being constructed and arranged to operate substantially as and for the purpose set forth.

PETER H. NELSON.

In presence of—

M. J. FROST,

J. N. HANSON.