

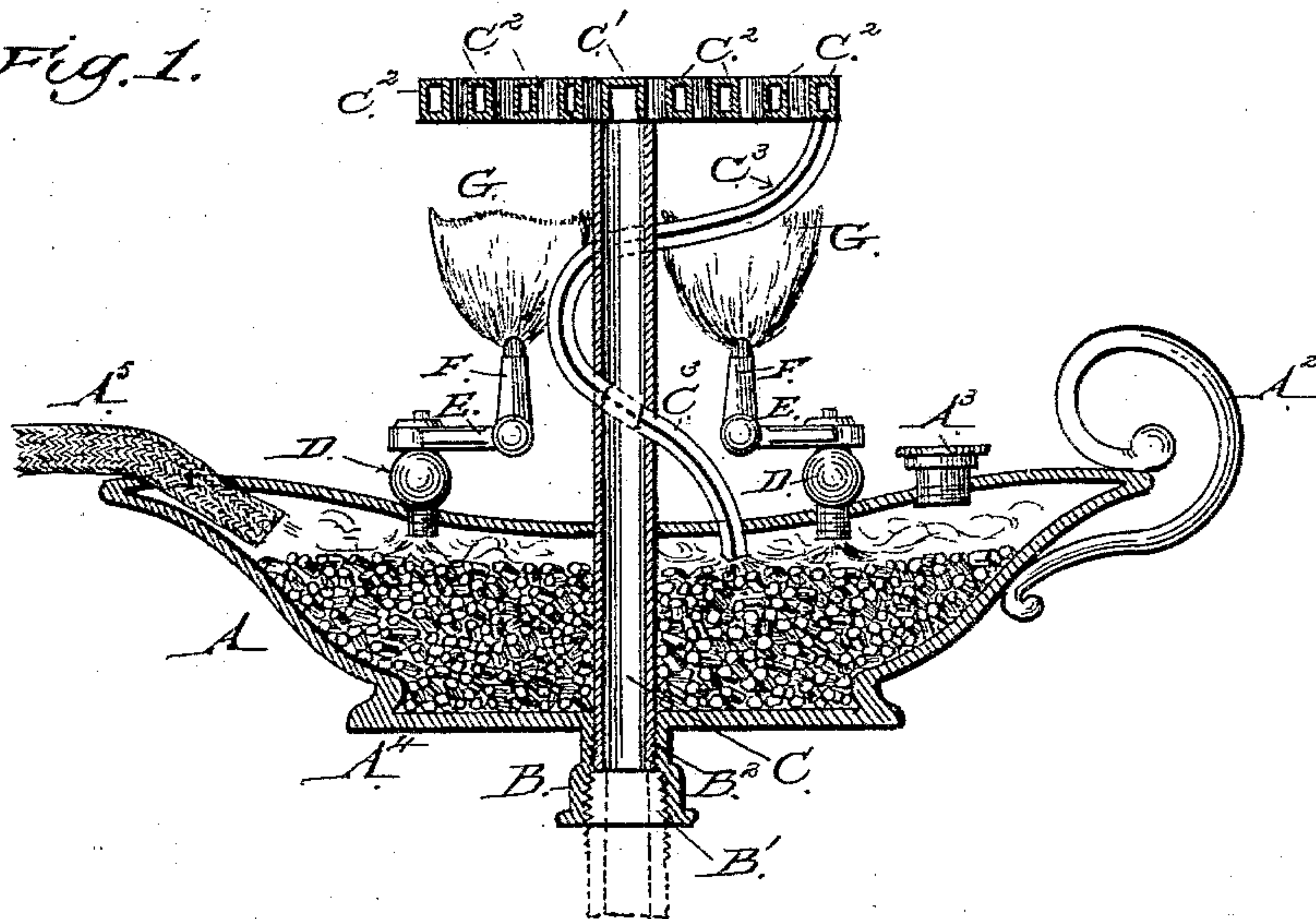
(No Model.)

J. H. AMIES.  
GAS ENRICHING APPARATUS.

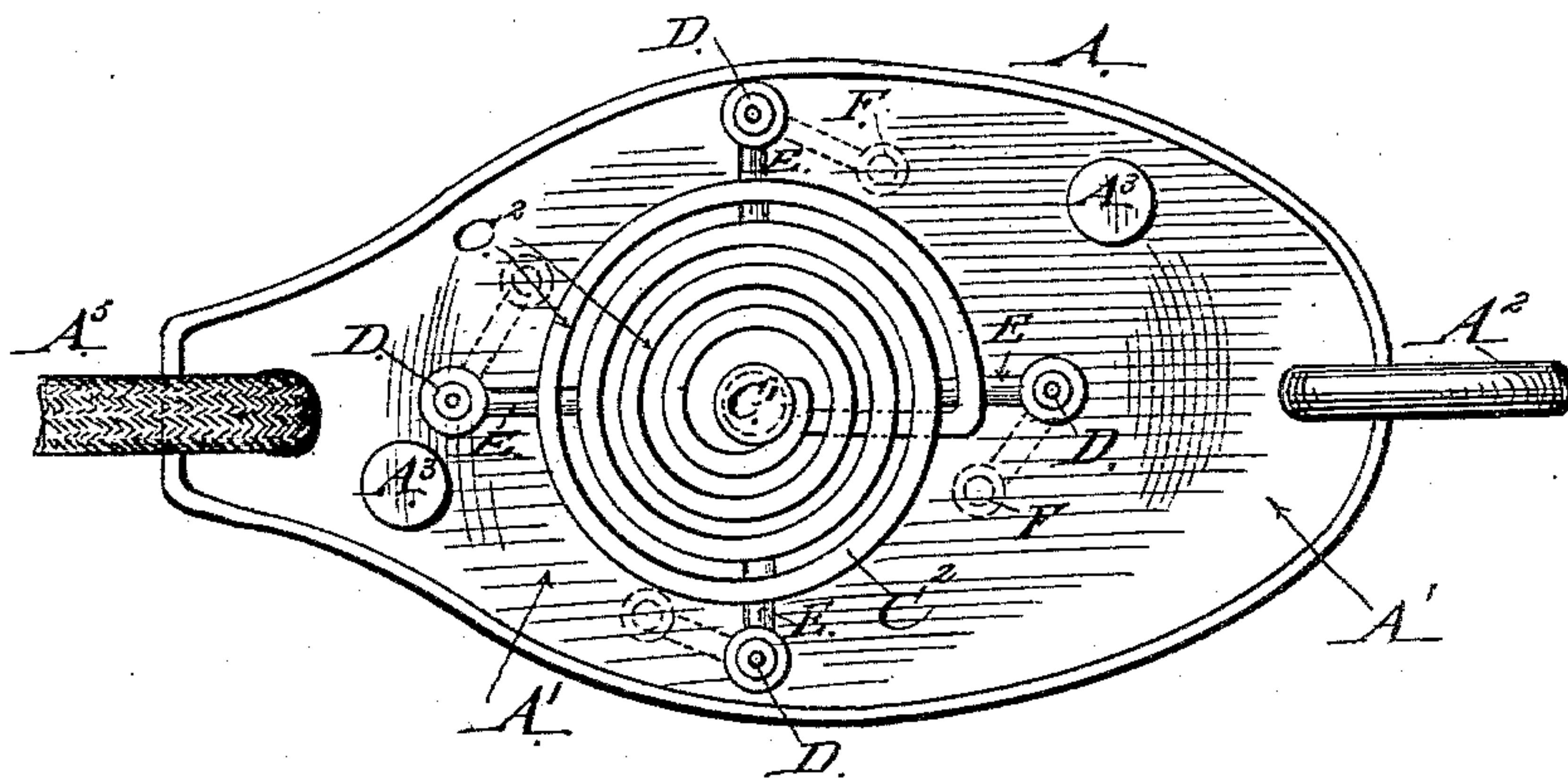
No. 378,418.

Patented Feb. 28, 1888.

*Fig. 1.*



*Fig. 2.*



Witnesses  
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# UNITED STATES PATENT OFFICE.

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## GAS-ENRICHING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 378,418, dated February 28, 1888.

Application filed March 8, 1887. Serial No. 230,104. (No model.)

*To all whom it may concern:*

Be it known that I, JOSEPH H. AMIES, a citizen of the United States, residing at the city of Reading, county of Berks, State of Pennsylvania, have invented a new and useful Improvement in Gas-Enriching Apparatus, of which the following is a specification.

This improvement pertains more particularly to apparatus designed for enriching illuminating-gas by passing the same in a highly-heated state over heavy hydrocarbons, vaporizing the same and intermixing therewith, thereby increasing the illuminating power of the gas and economizing the use of the same.

The object of my invention is, first, to so intensely heat the gas on its passage to the carbureting-reservoir that practically as soon as the gas is lighted its contact with the surface of the carbon will sufficiently heat the latter to immediately vaporize it and enrich the gas; and, secondly, to provide a ready means of reducing and regulating the amount of heat after the carbon has been melted.

In my improvement the burners are grouped around the central heating stand-pipe, and are so arranged that they will swing horizontally to and from the same. This permits of bunching or concentration of the flames of the burners upon said pipe and the spiral coil at the top of the same, and results in the instantaneous heating of the gas within the same, which, discharging out of the end of the pipe carried downward to and within the carbureting-reservoir, immediately vaporizes the hydrocarbon, saturates the gas, and the illumination is complete from the start. The burners are then turned on their pivotal point, partially or entirely away from the stand-pipe and from beneath the spiral coil, and the carbonization is kept up by the radiating influence of the burner-flames; or the burners may be fixed instead of pivoted, and the supply of gas reduced if it becomes so much enriched as to smoke.

The drawings herewith show fully the nature of my improvement, like letters of reference indicating like parts throughout, Figure 1 being a central longitudinal section through a carburetor having my improvements attached, consisting of swinging burners and a spiral coil pipe; Fig. 2, a plan of the same,

the burners, as shown by full lines, bunched beneath the spiral coil, and, as shown by the dotted lines, swung entirely clear of the stand-pipe and coil.

The reservoir or carburetor may be of any desired form. I prefer to make it shallow as to depth, but to give an extended surface in plan for the exposure of the hydrocarbon to the heated gas discharged from the coil within said reservoir. A represents the same in the form of a Pompier scone, A' being a closed air-tight cover to the same, A<sup>2</sup> a handle, A<sup>3</sup> an ordinary screw-capped filling-tube, A<sup>4</sup> the base, and A<sup>5</sup> a representation of the wick.

B represents a socket-head secured to the base, threaded at B' to screw upon the gas-supply pipe, or may be formed with a projected tube, as shown in dotted lines, to set within a socket terminating the supply-pipe. The latter mode is preferable, as it gives the means of readily lifting the carburetor from its base-connection and placing it upon a corresponding fixture in another room. It is threaded at B<sup>2</sup> for the stand-pipe C, which is screwed into the same and passes through the top A', terminating at a suitable height above the reservoir.

A spirally-coiled (preferably square cross-sectioned) pipe, C<sup>2</sup>, is provided with a central box, C', which is screwed upon the end of pipe C or formed integral therewith. I prefer to have the coil composed of not less than five concentric bends, and to have a space between each coil for the passage of the heated products of combustion from the gas flames to pass through, thus heating three sides of each coil and preventing smoke. A pipe, C<sup>3</sup>, being the terminal end of the outer coil, is returned inward toward the stand-pipe C, and may be coiled around the same or carried directly down to the reservoir parallel with the same; is passed through the top, and discharges the heated gas just above the hydrocarbon surface. Ground joint-heads D are suitably secured in the top A', at the proper distance from the stand-pipe C, to permit the leg E, with its burner F, to be thrown in close proximity to said stand-pipe. This swinging arrangement of the burners also brings the gas-flames G beneath the spiral coil C<sup>2</sup>, and upon lighting the burners F the gas within the pipe C, box C', coils C<sup>2</sup>, and discharge-pipe C<sup>3</sup> is rapidly and



intensely heated. This intensely-heated gas not only insures the quick vaporization of the carbon, no matter how low the supply may be nor how hard the mass, but more readily and thoroughly mixes with the vapor than it would if heated to a less degree.

The operation of the device is as follows: The reservoir A of the carburetor is filled through the feed-holes A<sup>3</sup> with stick or granulated hydrocarbon and placed upon its supply-pipe, the latter being supplied with a stop-cock, whereby the flow of gas through the carburetor stand-pipe C may be regulated. The burners are then swung around until they bunch beneath the coil C<sup>2</sup> and near the stand-pipe C, and are lighted prior to or subsequent to their bunching, the operator passing successively to each group of burners in the room and repeating the operation; or he may turn on a moderate flow of gas when a bright light is not immediately desired. In either case carburation takes place, but slower in one case than in the other. When a bright light and full illumination is desired, he returns to the carburetors and swings the burners, with flame G, partially or altogether away from the stand-pipe C, coil C<sup>2</sup>, and drop-pipe C<sup>3</sup>, and turns on the full head of gas. Carbonization is then continued by the heat radiated from the gas-flames.

The action of the device is as follows: The instant the burners are lighted with either a bright or lurid flame beneath the coil and in proximity to the stand-pipe the gas contained in both stand-pipe, coil, and drop-pipe C<sup>3</sup> becomes intensely heated and expanded, and

rushes down the return-pipe C<sup>3</sup> to the interior of the carburetor, where it impinges upon the extended surface of hydrocarbon exposed to its action, which instantly melts and vaporizes from its upper surface, saturating the gas, which in its mixed condition is then passed through the burners, giving a brilliant and luminous flame. If it is desired to leave the room in which the burners are used, and to find them ready to show a brilliant light on returning to the same, the burners are bunched, as before described, and a light flow of gas passed through the carburetor. This will keep the hydrocarbon melted, and vaporization of gas for full illumination will be instantaneous on turning a full supply of gas into the stand-pipe and coil.

Having shown the construction, use, and advantages of my improvement, I desire to claim as follows:

In a gas-enriching apparatus, the combination of the following elements: a hydrocarbon-reservoir having a suitable connection to a gas-supply pipe, a coiled heater, C<sup>2</sup>, placed above said reservoir, a vertical inlet-pipe, C, from the supply-pipe to said heater, a connecting-pipe, C<sup>3</sup>, from said heater to the top of the reservoir, and one or more burners attached to horizontal arms E, said arms being secured in heads D, attached to the top of said reservoir, whereby the burner or burners may be adjusted horizontally under said heater, substantially as shown and described.

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Witnesses:

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