W. W. UPP.

APPARATUS FOR GENERATING ILLUMINATING-GAS.

No. 192,354. Patented June 26, 1877.

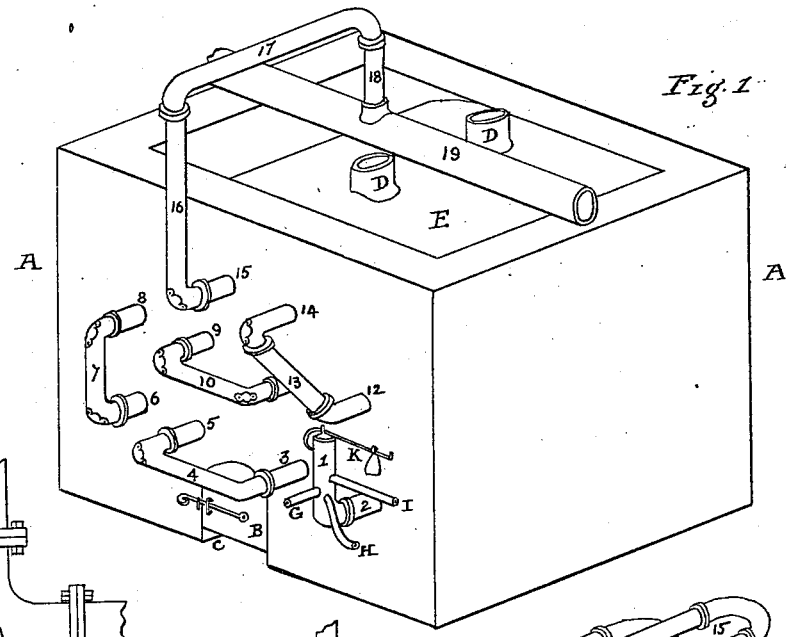

Fig. 1

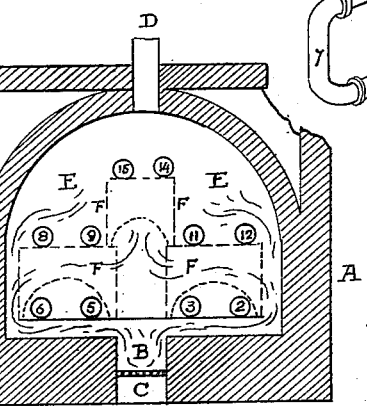

Fig. 3.

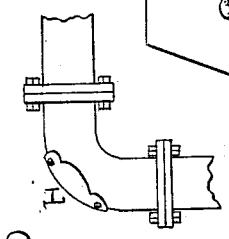

Fig. 5

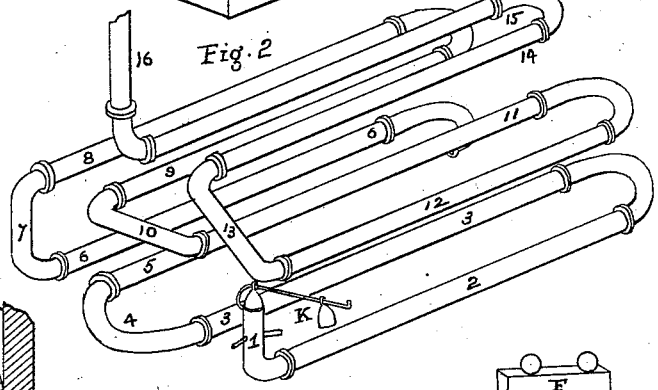

Fig. 2

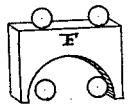

Fig. 4.

Witnesses
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UNITED STATES PATENT OFFICE.

WILLIAM WESLEY UPP, OF COLUMBIA, PENNSYLVANIA.

IMPROVEMENT IN APPARATUS FOR GENERATING ILLUMINATING-GAS.

Specification forming part of Letters Patent No. **192,354**, dated June 26, 1877; application filed May 8, 1877.

To all whom it may concern:

Be it known that I, WILLIAM WESLEY UPP, of Columbia, in the county of Lancaster and State of Pennsylvania, have invented certain Improvements in Apparatus for Generating Illuminating-Gas, of which the following is a specification:

The nature of this improvement consists in the arrangement of a feed-pipe, which is connected with a continuous pipe, and provided with a safety-valve and connections for branch pipes, the continuous portion extending through the front and back walls of the furnace, the protruding ends joined by flanged couplings, thus passed back and forth, side by side, and over each other in several series, within an arched fire-chamber exposed to the direct action of the fire, constituting a continuous pipe from the feed-pipe at one end to the hydraulic main at the other, as herein more fully set forth.

The accompanying drawings, with the letters of reference marked thereon, and a brief explanation, will enable those skilled in the art to make and use the same, and in which—

Figure 1 is a perspective view of the front and one side of the furnace with the pipes in place. Fig. 2 is a perspective illustration of the united pipes, to show their arrangement from the feed-pipe No. 1 to the vertical stand-pipe No. 16, which leads to the hydraulic main. Fig. 3 is a cross-section, showing the pipes exposed to the action of the fire within the arched chamber; and Fig. 4 is a detail, showing one of the pipe-rests F within the open archway E of the fire-chamber pipe-supports. Fig. 5 shows the flanged curve for uniting the pipes, and a covering-plate for an opening made for cleaning out either branch of the pipe from one opening.

At any suitable point on or contiguous to the furnace are placed the vessels or tanks to contain the hydrocarbons, such as resin and oil, as also a steam-generator, to supply the steam respectively conveyed, by suitable pipes to connect with branch-pipes G H I, into the outer section or feed-pipe 1, having a safety-valve, K, to guard against accident. Here the substances mingle and combine on entering and flowing from the feed-pipe 1, whence, after combining, the compound formed passes back through section 2 in the lower portion of the arch over the fire-chamber, then out and forward through section 3, and back and forth through the other successive sections 4, 5, 6, 7, and 8, and so on into the hydraulic main 19. The steam in contact with carbon of the oil or resin is decomposed, forming carbonic oxide and hydrogen. As my process is chiefly confined in its improvement to the feed-pipe and arrangement of the continuous pipe within a single heated arched fire-chamber, I shall not enter into other details connected with gas-generating apparatus. In Fig. 4 I show the fire-clay rests F, to support the pipes in the open archway E centrally, the ends being supported in the front and rear walls of the furnace A. B shows the grate or fire-box; *c*, the ash-pit; D, the flue, or two flues may be used and united into one externally. For cleaning both branches of the pipe from one point, instead of using screw-plugs, a simple plate or cap, L, having end lugs perforated for a screw-bolt, is affixed to cover an opening left in the rounded turn of the connection, Fig. 5. This is more simple, and easier managed for cleaning.

I am aware of various apparatus and processes in use for the manufacture of illuminating-gas, such as Patent No. 100,668—a vaporizer, retort or retorts, and superheaters incased in masonry, with suitable apertures for utilizing waste heat, as also a test-pipe, is used; so, also, Patent No. 185,508 uses separate sets of pipes, steam and oil retorts, in which the oil and water, gas, or steam are separately made, and mingle in the stand-pipe. A furnace is also used, with an oven having certain lateral side and rear passages and partition. I am also aware that in Patent No. 165,012 an oil-supply pipe and steam-pipe, entering a coil within a retort connected with a bench of retorts, &c., is claimed, all of which, as shown and claimed, is hereby disclaimed.

What I claim as my invention is—

1. The combination of a continuous coil of pipe, from the hydraulic main 19 to the external feed-pipe I, with its branch connections G H I and safety-valve K, the whole ar-

ranged substantially as and for the purpose specified.

2. In combination with the sectional pipes, united by rounded elbows, provided with flanged ends and an opening in the turn, the covering plate or cap L, to close the same, as and for the purpose mentioned.

3. In combination with the feed-pipe 1 and branch or connection pipes G H I, the safety-valve K, as and for the purpose set forth.

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Witnesses:
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