

(No Model.)

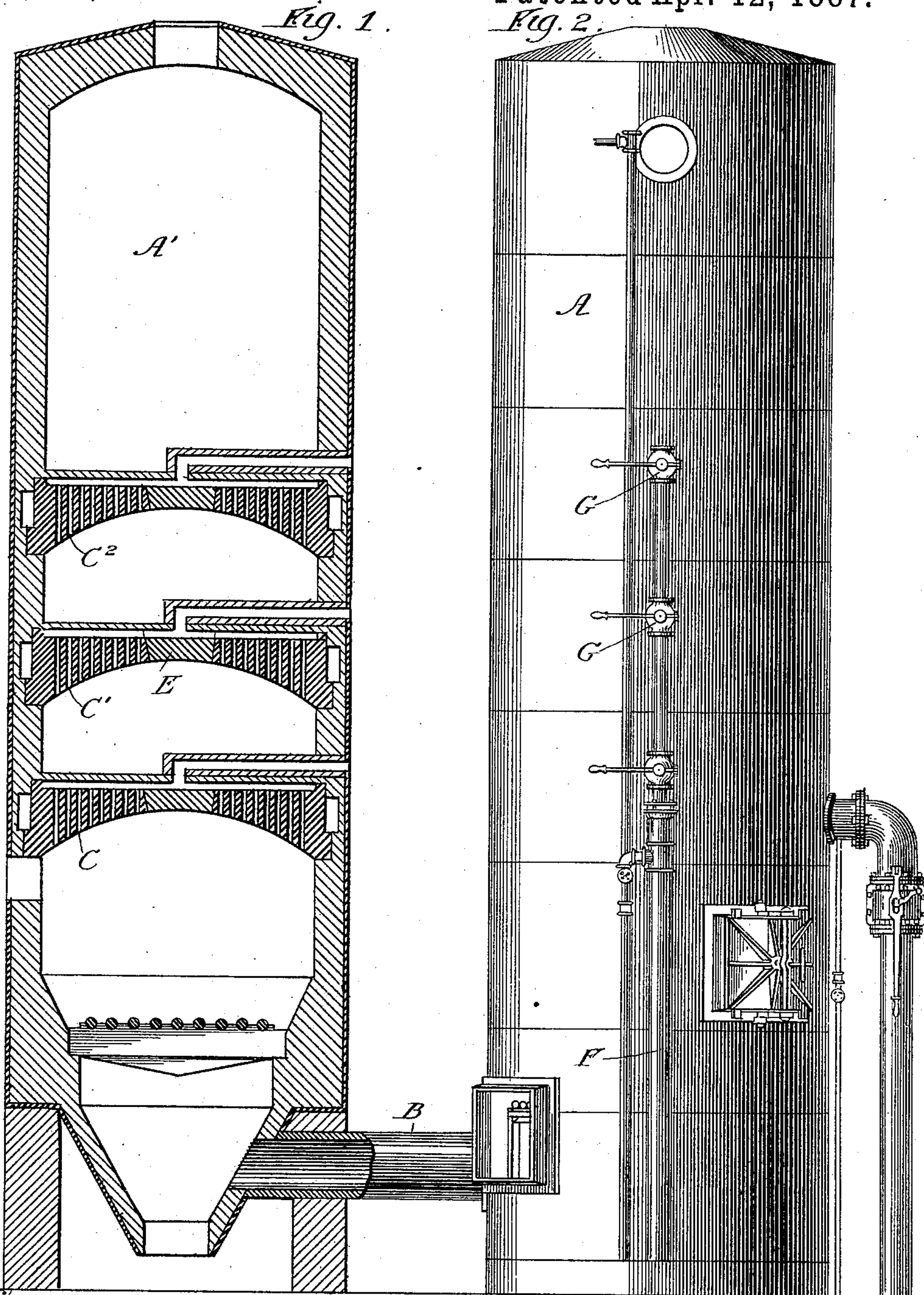
H. PRATT & J. J. RYAN.

2 Sheets—Sheet 1.

GAS GENERATOR.

No. 361,078.

Patented Apr. 12, 1887.



Witnesses:

Frank J. Blanchard
Louis Nolting

Inventor:

Henry Pratt
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(No Model.)

2 Sheets—Sheet 2.

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Fig. 3.

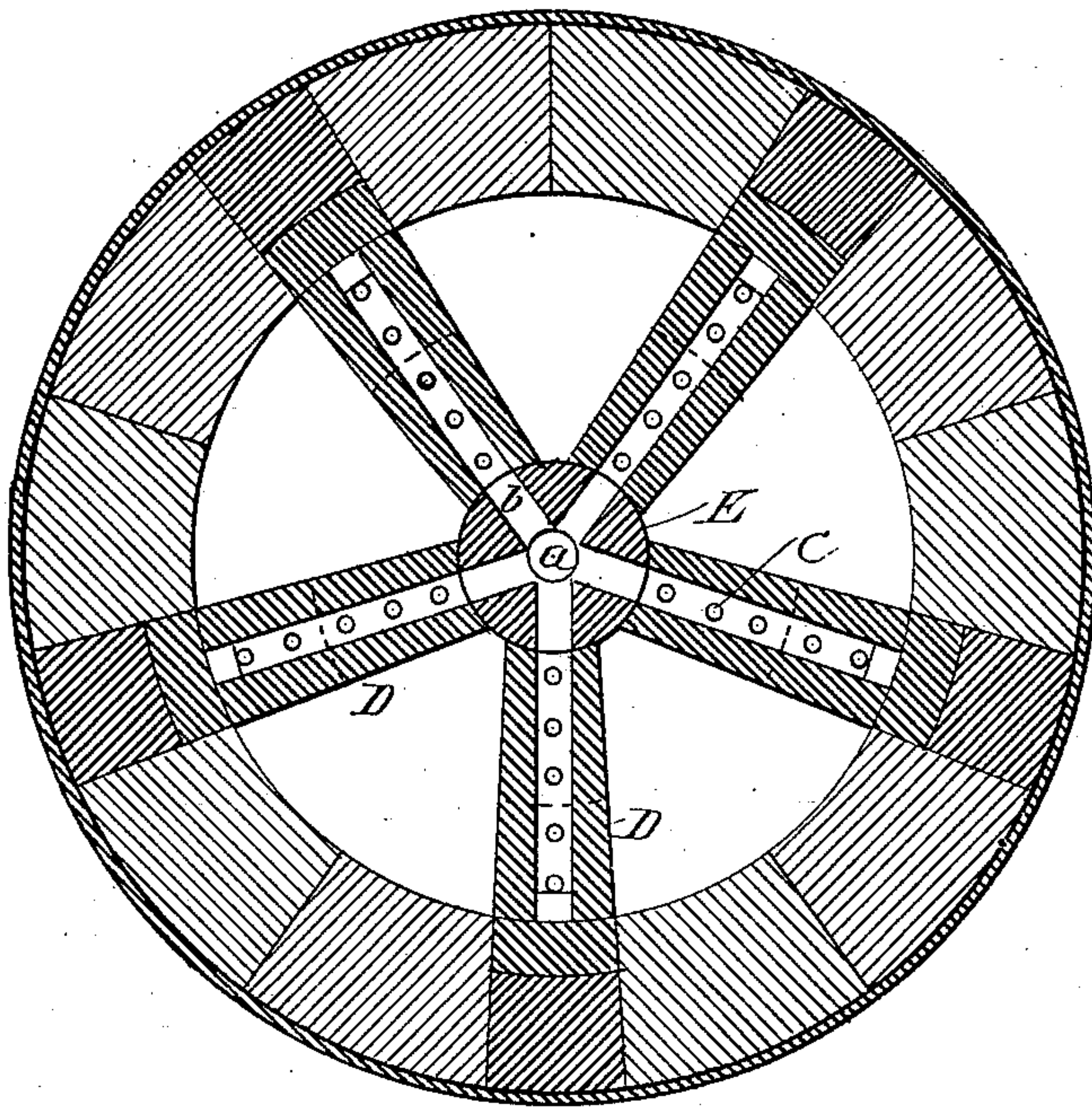
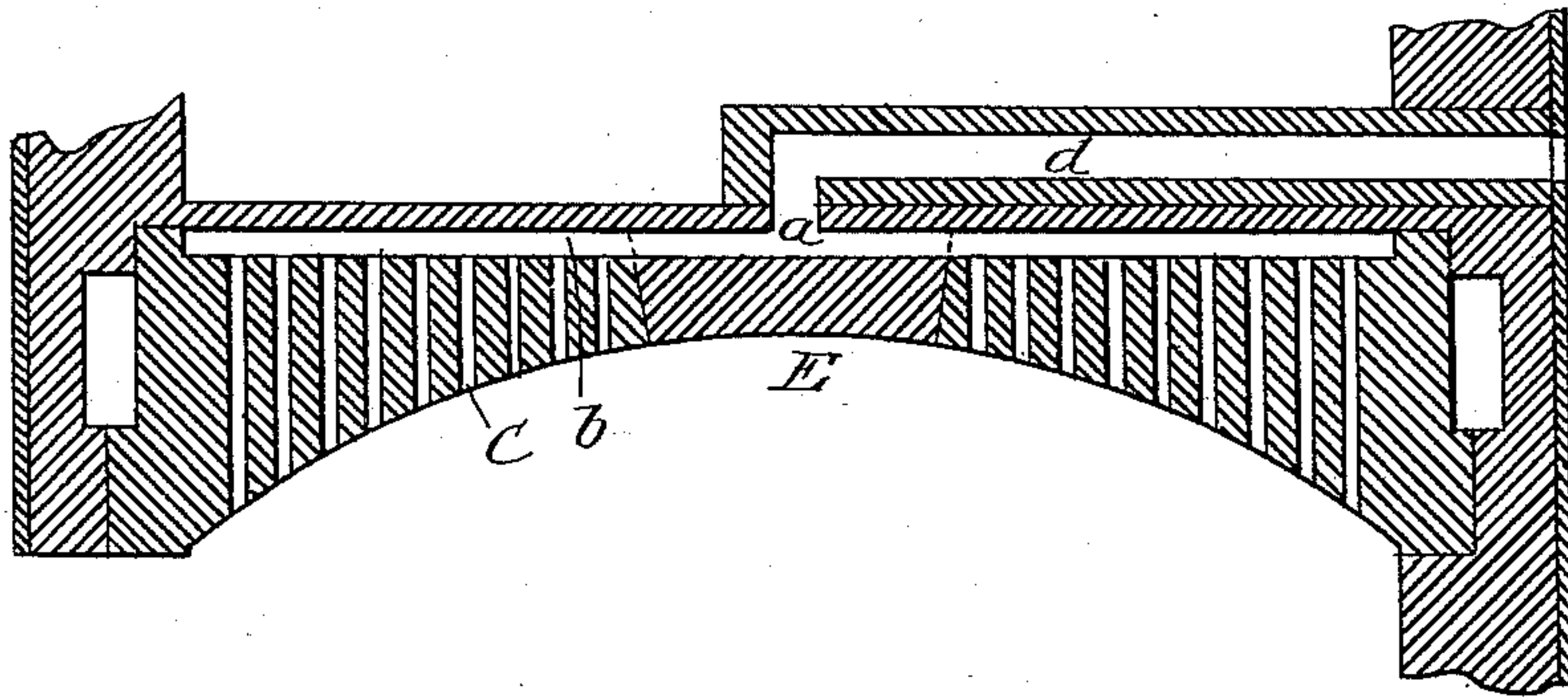


Fig. 4.



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UNITED STATES PATENT OFFICE.

HENRY PRATT AND JOHN J. RYAN, OF CHICAGO, ILLINOIS.

GAS-GENERATOR.

SPECIFICATION forming part of Letters Patent No. 361,078, dated April 12, 1887.

Application filed November 19, 1884. Serial No. 148,279. (No model.)

To all whom it may concern:

Be it known that we, HENRY PRATT and JOHN J. RYAN, citizens of the United States of America, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Gas-Generators, of which the following is a specification, reference being had therein to the accompanying drawings.

Our invention relates to improvements in furnaces for generating hydrocarbon gases for illuminating purposes, and more particularly to improvements on the furnaces shown in Letters Patent No. 297,162, granted to us on the 22d day of April, 1884.

The object of the invention is to provide improved means for feeding suitable volatile hydrocarbons to the gases generated in the furnace, as described in the Letters Patent named; and to that end it consists of a series of arches situated at different points above the fire-bed, and each provided with a series of radial ports communicating with the interior of the furnace through a number of small openings. Communication is also formed between the radial ports of each arch and a common supply-pipe, each arch being provided with a central opening, into which the radial ports open, and which is connected with the supply-pipe by a main channel. The supply-pipe is provided with a series of stop or regulating valves, through the medium of which it is determined which arch is to be used, as will be described.

In the accompanying drawings, Figure 1 is a vertical section of the furnace. Fig. 2 is an elevation thereof, and Figs. 3 and 4 a sectional plan and a cross-section of one of the arches.

Like letters refer to like parts in each view.

The manner of generating the heating-gas is the same as described in the Letters Patent referred to, there being two or more furnaces, A A', suitably connected by a pipe, B, or one furnace subdivided. Air is admitted to bring the fire to a sufficient degree of heat to decompose the steam to be applied thereto, such steam passing down through one fire-bed, thence through the connecting-pipe, and up through the second fire-bed, the whole being thus converted into carbonic oxide and hydrogen. To convert the gas thus formed into an illuminating-gas it is necessary to mix

therewith some volatile hydrocarbon—such as naphtha—and it is to the means employed to bring about this result in the most satisfactory manner to which this invention has special reference.

Situated within each furnace A A', or in each compartment of a subdivided furnace, are a series of arches, C C' C'', &c., as many as desired. Each arch is spider-shaped—that is, each consists of a series of arms, D, radiating from a center, E. An opening or space, *a*, is formed in center E, with which a series of radiating ports, *b*, communicate, there being one of such ports for each arm D. Communication is formed between ports *b* and the interior of the furnace through the medium of small openings *c*, which pass downwardly through arms D. A main channel, *d*, communicates with the center E, and thence with the ports *b* and the interior of the furnace, there being one of such channels for each arch. At the outer end each channel *d* communicates with a supply-pipe, F, such pipe being provided with valves G, one for each arch.

It will be understood that owing to the relative position of the several arches with respect to the fire-bed such arches will be heated to different degrees, as also will the oils or resultant vapors passing therethrough. The object we have in view in the use of more than one arch is to avoid all danger of overheating the oil or vapors introduced therethrough. It has frequently been found in practice that where an arch has been properly located to prevent any lack of heat it is, under certain circumstances, overheated, owing to the height of the burning fuel and like causes, and we therefore provide the additional arches for use in such cases. It will be understood that any particular arch may be used, while the others are shut off by the proper manipulation of the valves G. In this manner, whenever the lower arch is for any reason too hot, the one next above may be used.

We are aware of the existence of Letters Patent No. 263,984, issued to one Springer, and Letters Patent No. 274,637, issued to one Moses, and disclaim any construction shown therein.

What we claim is—

1. The combination, in a cupola generator for the manufacture of illuminating-gas, and

with the body and grate thereof, of a hollow perforated arch, said arch having openings therein to discharge into the combustion-chamber and being provided with a liquid-hydrocarbon-supply pipe.

2. The combination, in a cupola generator for the manufacture of illuminating-gas, and with the body thereof, of a hollow perforated diaphragm or arch, said diaphragm having 10 openings therein to discharge into the combustion-chamber and being provided with a liquid-hydrocarbon-supply pipe, as described.

3. In a gas-generating furnace, the combination, with a cupola, its grate, and a volatile- 15 hydrocarbon-supply pipe, of a series of hollow arches placed one above the other and each communicating with the interior of the furnace and with the supply-pipe, as described and shown.

4. In a gas-generating furnace, the combination, with a cupola, its grate, and a supply-pipe, of a series of spider arches, situated as described, each communicating with the supply-pipe and each provided with radial ports and openings for forming communication with 25 the interior of the furnace, as set forth.

5. In a gas-generating furnace, the combination, with a cupola, its grate, and arches C C', &c., provided with ports *b*, openings *c*, and central space *a*, and channel *d*, of supply-pipe 30 F and valves G, as set forth.

In testimony whereof we affix our signatures in presence of two witnesses.

HENRY PRATT.
JOHN J. RYAN.

Witnesses:

M. J. CLAGETT,
FRANK S. BLANCHARD.