

C. R. MILLER.

APPARATUS FOR THE MANUFACTURE OF GAS.

(Application filed May 8, 1899.)

(No Model.)

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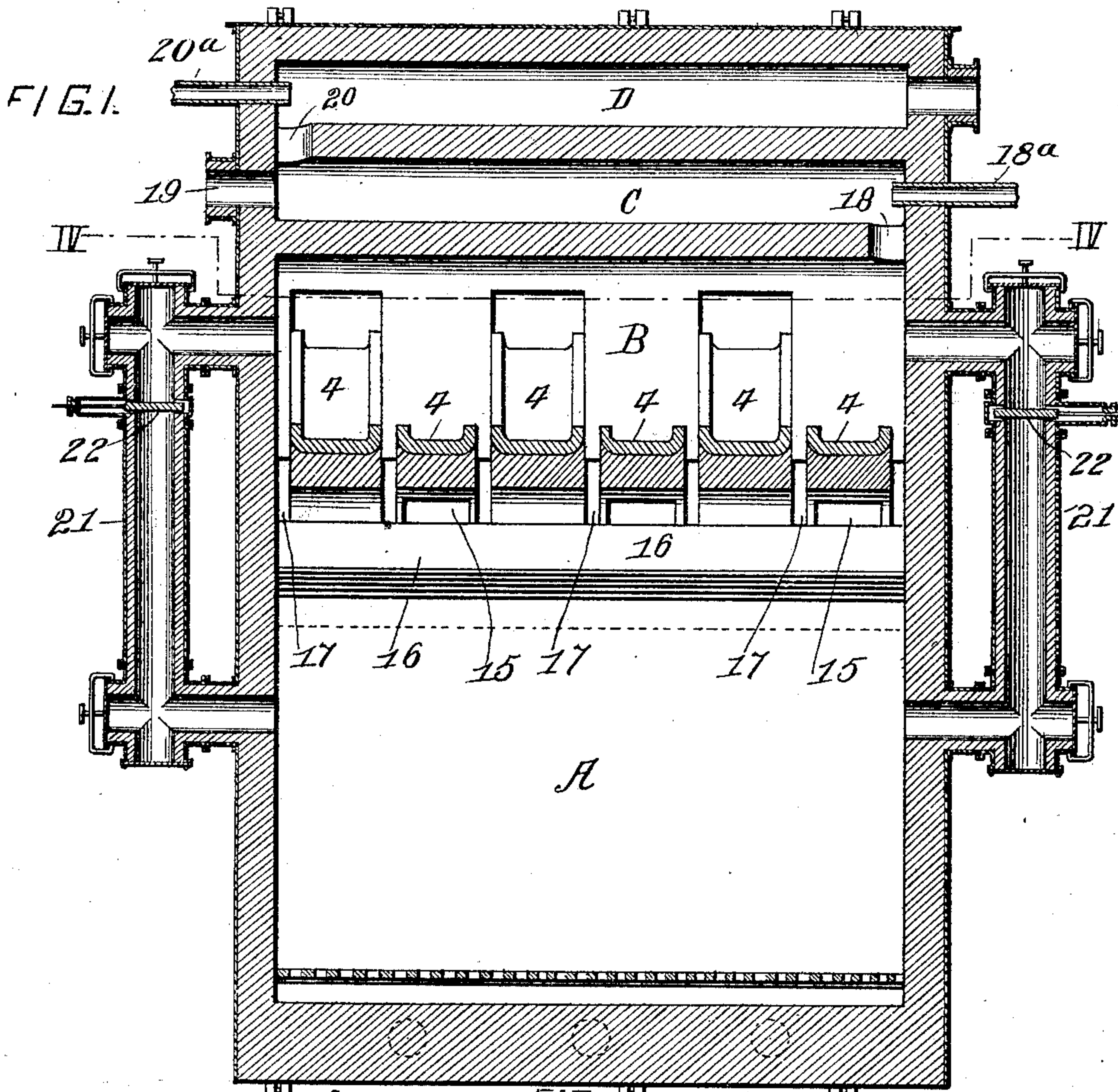
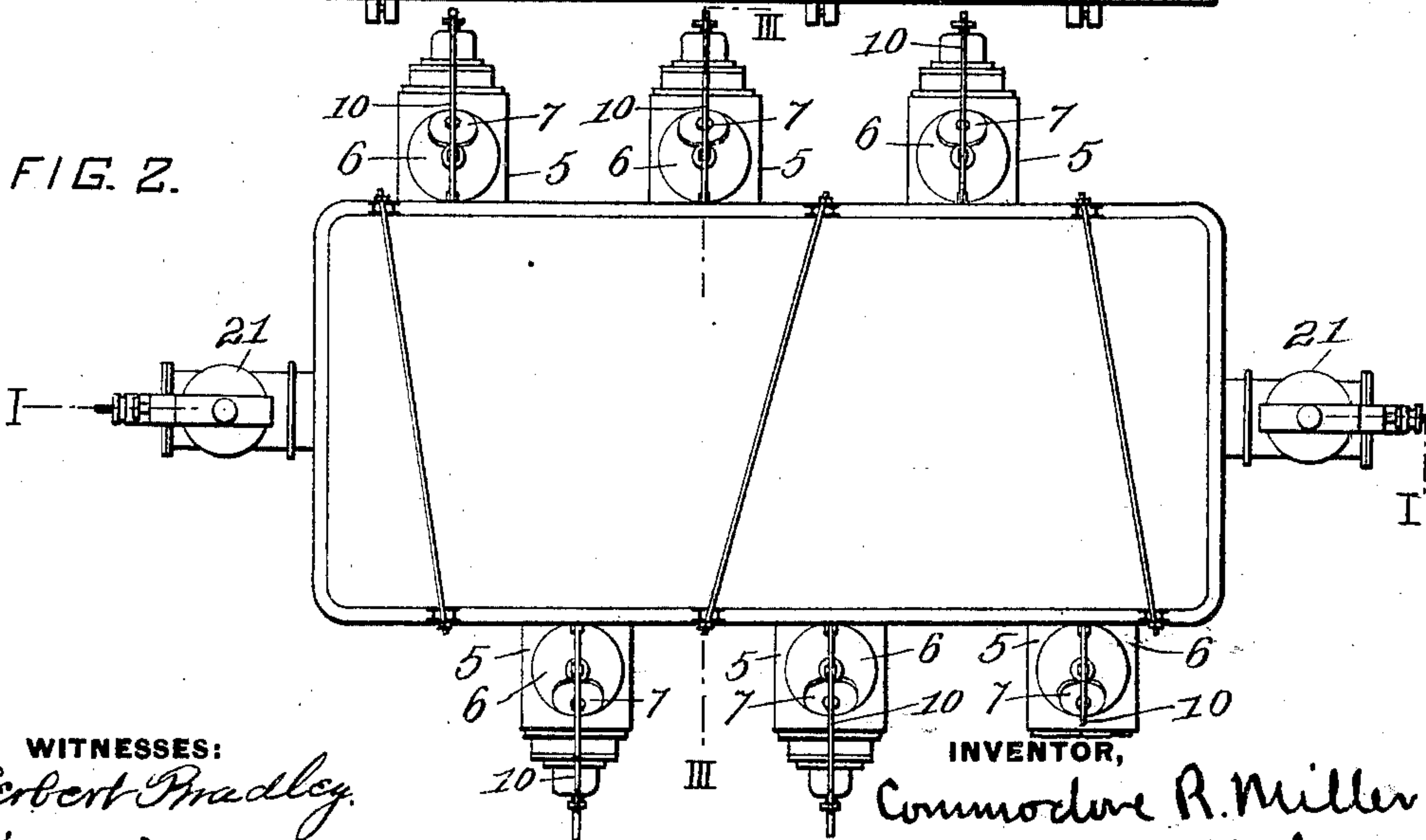


FIG. 2.



WITNESSES:

Herbert Bradley
F. M. Dapper

INVENTOR,

Commodore R. Miller
by Darwin S. Wolcott

Att'y.

No. 676,990.

Patented June 25, 1901.

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FIG. 3.

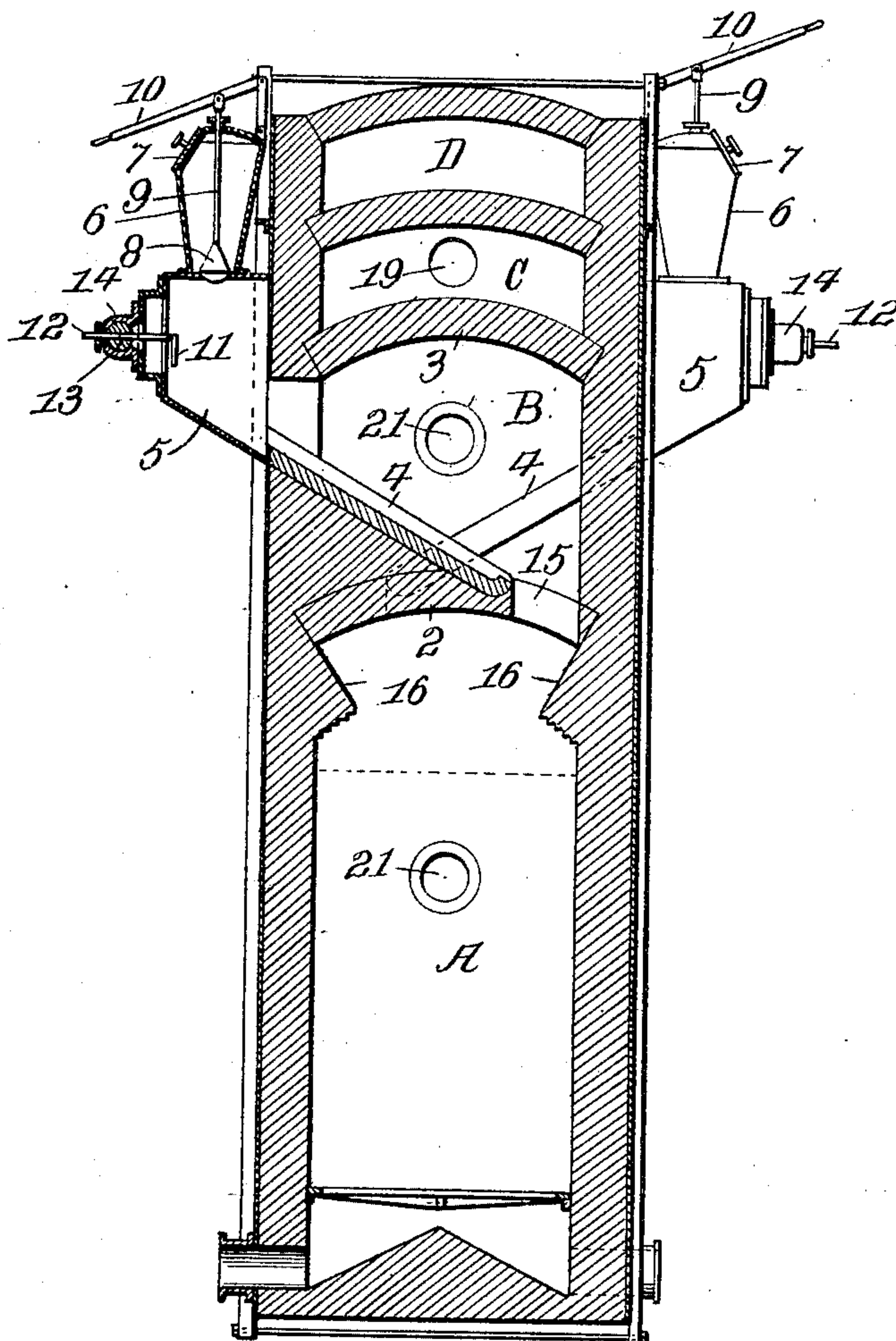
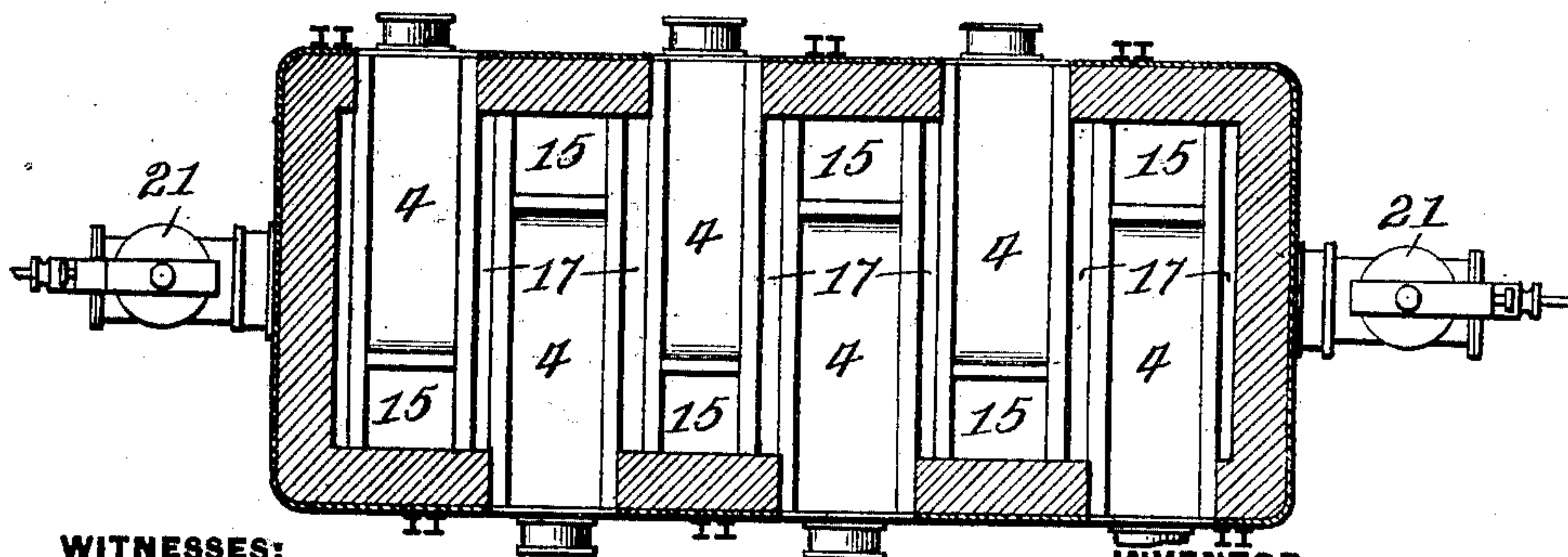


FIG. 4.



WITNESSES:

Herbert Bradley
F. M. Dapper

INVENTOR,

Commodore R. Miller
by Danvers S. Wolcott

Att'y.

UNITED STATES PATENT OFFICE.

COMMODORE R. MILLER, OF PITTSBURG, PENNSYLVANIA, ASSIGNOR TO THE
W. J. McCLURG GAS CONSTRUCTION COMPANY, OF SAME PLACE.

APPARATUS FOR THE MANUFACTURE OF GAS.

SPECIFICATION forming part of Letters Patent No. 676,990, dated June 25, 1901.

Application filed May 8, 1899. Serial No. 716,003. (No model.)

To all whom it may concern:

Be it known that I, COMMODORE R. MILLER, a citizen of the United States, residing at Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented or discovered certain new and useful Improvements in Apparatus for the Manufacture of Gas, of which improvements the following is a specification.

10 The invention described herein relates to certain improvements in the manufacture of gas, and has for its object the retention of the fresh fuel in such position that the preliminary distilling action will be effected by the
15 action of hot gases and without contact with or outside of the zone of highest heat.

The invention is hereinafter more fully described and claimed.

20 In the accompanying drawings, forming a part of this specification, Figure 1 is a sectional elevation of my improved producer, the plane of section being indicated by the line I I, Fig. 2. Fig. 2 is a top plan view of the same. Fig. 3 is a sectional elevation on
25 a plane indicated by the line III III, Fig. 2; and Fig. 4 is a sectional plan view on a plane indicated by the line IV IV, Fig. 1.

30 In the practice of my invention the producer is preferably made oblong in horizontal contour and is constructed as regards its lower portion in the usual or any suitable manner. At suitable points horizontal partitions or arches 2 and 3 are built across the producer, thereby dividing the latter into
35 three chambers A, B, and C, which for convenience will be termed "combustion," "gasifying," and "carbureting" chambers. One or more inclined beds or chutes 4 are formed in the gasifying-chamber B and extend from
40 one side wall toward or to the opposite wall. One or more openings are formed through the side walls of the producer at or near the upper ends of the inclines or chutes for the purpose of charging coal into the latter. It is
45 preferred to employ closed hoppers for this purpose. To this end a box 5 is formed outside of the producer around the opening to the incline or chute, and on this box is placed the hopper 6, which is provided with an inlet
50 normally closed by a door or cover 7. The lower end of the hopper is closed by a valve

8, having a stem 9, which extends up through the top of the hopper and is operated by a lever 10 or other suitable means.

The inclines or chutes 4 are arranged at or approximately at the angle of rest of the material charged through the hopper or, in other words, at such an angle that the fuel will remain thereon until shifted by the pusher, which consists of a disk or plate 11, secured
60 to the inner end of a rod 12. This rod passes through a ball 13, arranged in a correspondingly-shaped seat 14, formed in the outer wall of the box 5. This construction permits of the free operation of the pusher without any
65 escape of gas. By the operation of the pusher the fuel on the inclines or chutes is pushed down through the openings 15 in the arches 2 into the combustion-chamber A. As it is preferred to extend the inclines or chutes en-
70 tirely across the chamber, and as the openings 15 are located at the lower ends of the inclines, and consequently closely adjacent to the side walls of the producer, provision is made for the distribution of the fuel toward
75 the middle of the combustion-chamber by constructing inwardly-inclined ledges or shelves 16 immediately below the openings 15, as clearly shown in Fig. 3.

80 In operating my improved producer fresh coal is charged on the inclines or chutes 4 and allowed to remain thereon subjected only to the distilling action of hot gases which pass from the combustion-chamber A into the gasifying or distilling chamber B through the
85 openings 15 and slots 17, formed through arch 2, intermediate of the inclines or chutes 4. The gases pass from the distilling-chamber B into the carbureting-chamber C through the opening 18 at one end of the chamber, into
90 which a suitable carbureting fluid, as petroleum, is introduced at 18^a. If the gases become sufficiently carbureted during their passage through this chamber, they are allowed to escape through the outlet 19; otherwise
95 this outlet is closed and the gases are caused to pass through the opening 20 to and through the auxiliary chamber D, into which petroleum or other carbureting fluid is introduced through pipe 20^a. After the more volatile
100 constituents of the coal have been distilled off the coal is pushed off the inclines or chutes

into the combustion-chamber A, where a high incandescent heat is maintained by blasts of air or air and steam forced into the ash-pit through suitable pipes, and fresh fuel is charged onto the inclines or chutes. As is well known, bituminous coal when charged onto a bed of incandescent fuel will quickly agglutinate and form a close and nearly impermeable bed, thereby confining any gases generated below such bed. In order to provide an outlet for such gases, which would otherwise be consumed, by-passes 21 are provided. These by-passes extend from points below the general level of the fuel to the distilling-chamber B, as shown in Figs. 1 and 3. As soon as the coal has become sufficiently coked to permit a free passage of gases the valves 22 in the by-passes may be closed.

It is characteristic of my improvement that large volumes of easily-volatilized and highly-combustible gases are saved by the preliminary distillation effected by the hot gases. As this preliminary distillation is effected at a comparatively low temperature and out of contact with flame or incandescent fuel in the combustion-chamber, all or nearly all the easily-volatilized gases will be saved.

It will be observed that the fuel lying on the inclined beds 4, being arranged directly above the combustion-chamber A and forming the top thereof, is subjected not only to the hot gases passing over them, but the beds themselves will be highly heated, thereby accelerating the distillation of the fuel. This heating of the beds to sufficient temperature to effect distillation is especially important when it becomes necessary to employ the by-passes for the escape of gases from the combustion-chamber, as heretofore described.

I claim herein as my invention—

1. A gas-producer having in combination a combustion-chamber, beds or supports for fresh coal arranged transversely of the combustion-chamber in the path of flow of gases from the combustion-chamber and openings through the walls of the producer at the ends of the beds for charging of coal onto the beds, substantially as set forth.

2. A gas-producer having in combination, a combustion-chamber, a distilling-chamber

connected therewith, coal beds or supports forming the top of the combustion-chamber and the bottom of the distilling-chamber, openings through the walls of the producer at the ends of the beds or supports for charging fresh coal onto the beds, and openings through said beds to permit of the discharge of the partially-distilled coal or coke thereon into the combustion-chamber and the flow of gases from the latter into the distilling-chamber, substantially as set forth.

3. A gas-producer having in combination, a combustion-chamber, a distilling-chamber, inclined beds or supports separating the combustion and distilling chambers and openings through the walls of the producer at the ends of the beds or supports for charging fresh coal thereon, said beds or supports having openings at their lower ends for the passage of partially-distilled coal or coke directly into the combustion-chamber, substantially as set forth.

4. A gas-producer having in combination, a combustion-chamber, a distilling-chamber located above the combustion-chamber, oppositely-inclined beds or supports extending across the distilling-chamber, said beds or supports being separated from each other to form passages for the flow of products of combustion from the combustion-chamber into the distilling-chamber, the lower ends of the beds or supports being adjacent to openings leading into the combustion-chamber, substantially as set forth.

5. A gas-producer having in combination, a combustion-chamber, a distilling-chamber located above the combustion-chamber, inclined beds or supports extending across the distilling-chamber and separated from each other to form passages for the products of combustion and having their lower ends adjacent to openings into the combustion-chamber and hoppers for feeding the fuel onto the beds or supports, substantially as set forth.

In testimony whereof I have hereunto set my hand.

COMMODORE R. MILLER.

Witnesses:

DARWIN S. WOLCOTT,
F. E. GAITHER.