

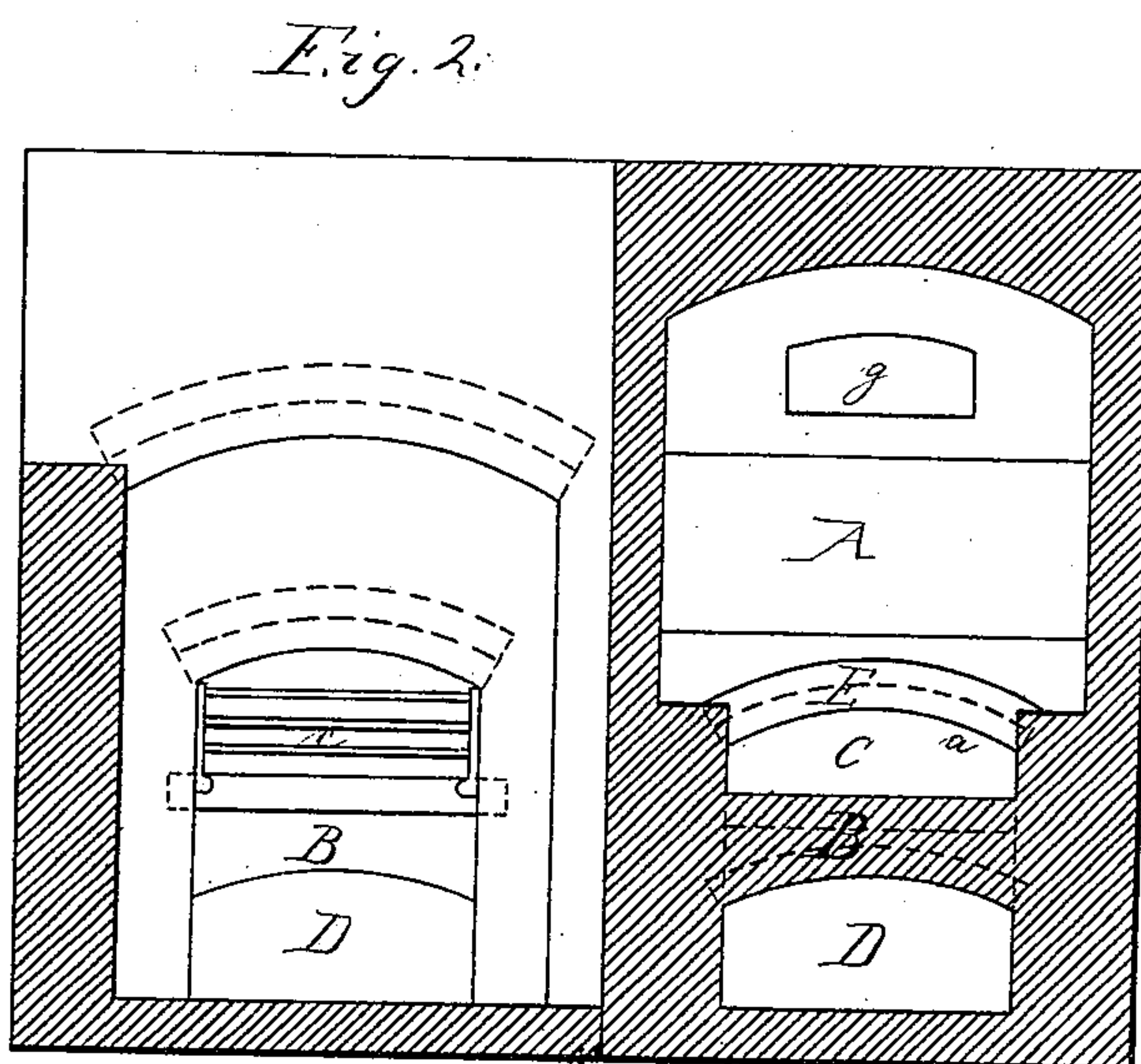
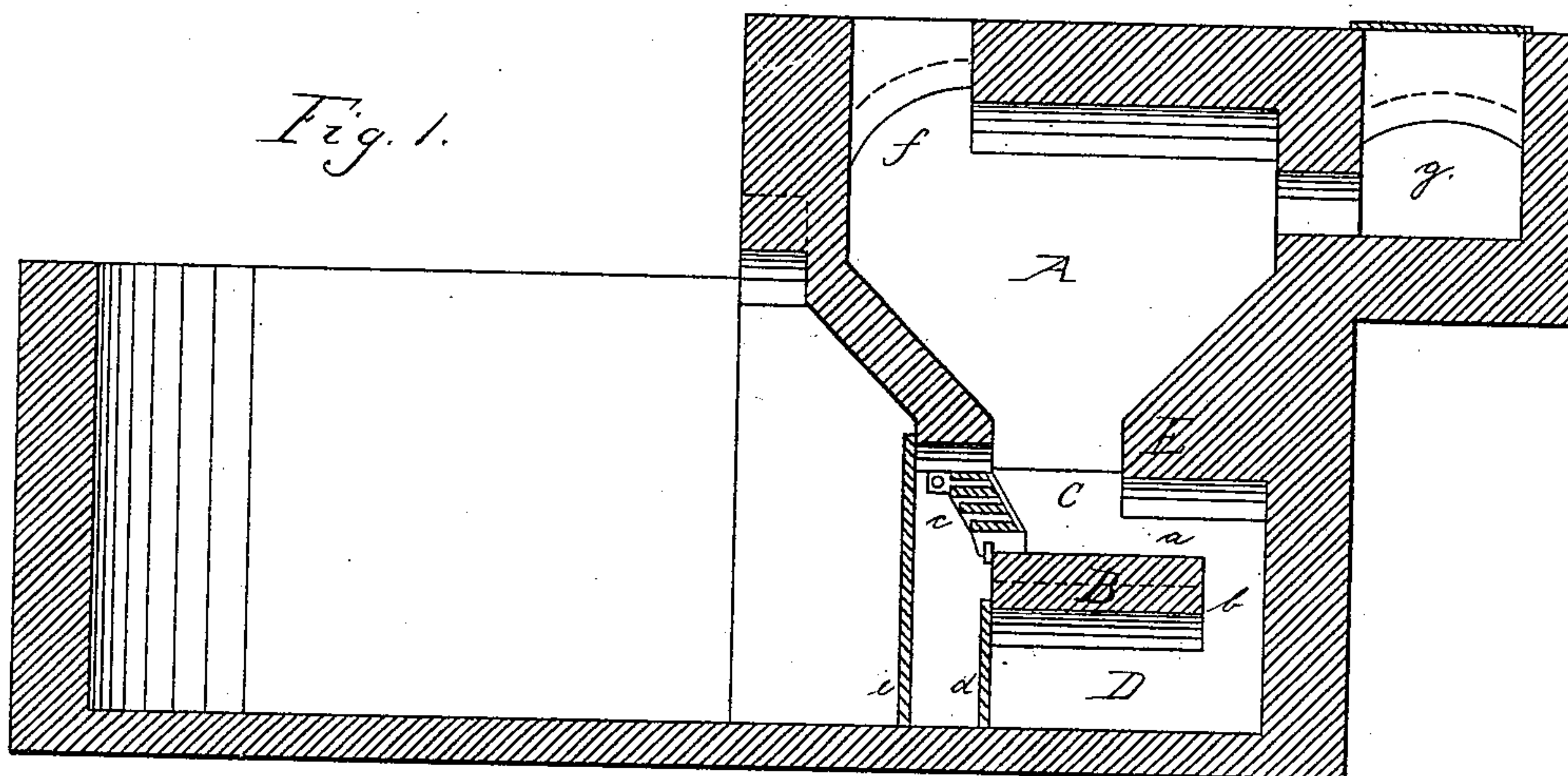
(No Model.)

J. ZELLWEGER.

GAS PRODUCER.

No. 271,673.

Patented Feb. 6, 1883.



WITNESSES—

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UNITED STATES PATENT OFFICE.

JOHN ZELLWEGER, OF CHICAGO, ILLINOIS.

GAS-PRODUCER.

SPECIFICATION forming part of Letters Patent No. 271,673, dated February 6, 1883.

Application filed March 7, 1882. (No model.)

To all whom it may concern:

Be it known that I, JOHN ZELLWEGER, of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful
5 Improvements in Gas-Producers; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon,
10 which form a part of this specification.

The invention relates to the construction of that part of gas-producers in which the combustion of the fuel takes place and in which the ashes and clinkers accumulate; and it has
15 for its object to afford better facilities for cleaning the fire. Therefore the invention consists in the devices and combinations of devices employed by me, as hereinafter described and specifically claimed.

20 In the accompanying drawings, Figure 1 represents a longitudinal vertical section of a gas-producer having my improvements; Fig. 2, a front view and transverse vertical section of a double producer.

25 Like letters designate corresponding parts in both the figures.

A denotes the coking-chamber; B, the hearth or hearth-plate; C, the combustion-chamber; D, the cooling-chamber or ash-pit underneath the hearth; *a*, a horizontal flue above
30 the hearth, leading from the combustion-chamber; *b*, a vertical flue behind the hearth, leading from the flue *a* to the cooling-chamber; E, the bridge or ceiling covering the flues *a*
35 and *b*; *c*, a step-grate; *d*, a door in front of cooling-chamber or ash-pit, and *e* a door for closing the entire opening to the furnace; *f*, an opening for charging the coking-chamber with fresh fuel, and *g* the gas-conducting flue.

40 One principal condition to the effective working of gas-producers is to keep the combustion-chamber or fire-place clear of clinkers and ashes. Gas-producers should therefore be constructed so that the remnants from the fuel
45 can be quickly and conveniently removed without disturbing the body of the fuel in the producer-chamber and without a waste of fuel. With these objects in view I have constructed the lower part of the producing-chamber, known
50 as the "combustion-chamber" or "fire-place," of suitable width transversely, according to the

size of the producer, but of limited dimensions in the longitudinal direction. Further; I have provided a hearth, B, at the bottom, upon which the body of the fuel rests, and
55 have provided two openings above the hearth—one in the front wall and the other in the rear wall; and for the purpose of preventing the fuel from falling through these openings, I close the one in front by a step-grate, *c*, and I
60 extend the rear opening backward through the rear wall of the combustion-chamber beyond the foot of the natural slope of the fuel in the producer. The rear opening—a vertical flue, *b*—
65 thus communicates directly with the ash-pit or cooling-chamber D under the hearth, and indirectly through the flue *a* under the bridge E with the combustion-chamber C. With this arrangement any clinkers or ashes accumulating in the combustion-chamber can be pushed
70 backward through the horizontal channel *a* to the vertical flue *b*, and there dropped into the ash-pit or cooling-chamber D.

The step-grate *c* in the front opening is more desirable than a grate with vertical or inclined
75 bars, because it gives better support to fine fuel or coke, admits the largest possible quantity of atmospheric air, and above all affords easy access to all parts of the combustion-chamber.
80

The rear spring, *a*, may be divided into sections by vertical or horizontal partitions.

The best material for the hearth is brick or tile; but it may be a metallic plate. A gate in place of the hearth is more subject to wear
85 and tear, and will cause more or less waste of fuel through the interstices between the bars.

The ash-pit D may be constructed as a tank to contain water, which as it is evaporated by the glowing clinkers will rise and be decom-
90 posed in the producer-chamber and will form into combustible gases.

I am aware that it is not new to construct a furnace with a step-grate, and I am also aware that it is not new to construct furnaces with a
95 vertical flue extending downwardly from the rear of the hearth to the ash-pit; but I am not aware that any furnace has been constructed prior to my invention thereof having a solid hearth-plate, a combustion-chamber of
100 less dimension longitudinally than transversely, and having an opening in the front wall

closed by a step-grate, and a rear opening extended back through the rear wall of the combustion-chamber, and a horizontal flue, *a*, and vertical flue *b*, bridge E, and cooling-chamber 5 D, as shown and described herein.

What I claim is—

A gas-producer having coking-chamber A, solid hearth-plate B, combustion-chamber C, of less dimension longitudinally than trans- 10 versely, and having openings in the front and rear walls, respectively, said front openings being closed by a step-grate, *c*, and said rear openings being extended backward through

the rear wall of the combustion-chamber, as described, the horizontal flue *a*, and vertical 15 flue *b*, and the cooling-chamber D, and bridge E, substantially as and for the purpose set forth.

In testimony that I claim the foregoing as my invention I affix my signature in presence 20 of two witnesses.

JOHN ZELLWEGER.

Witnesses:

F. W. KASEHAGEN,
F. U. ADAMS.