

No. 654,456.

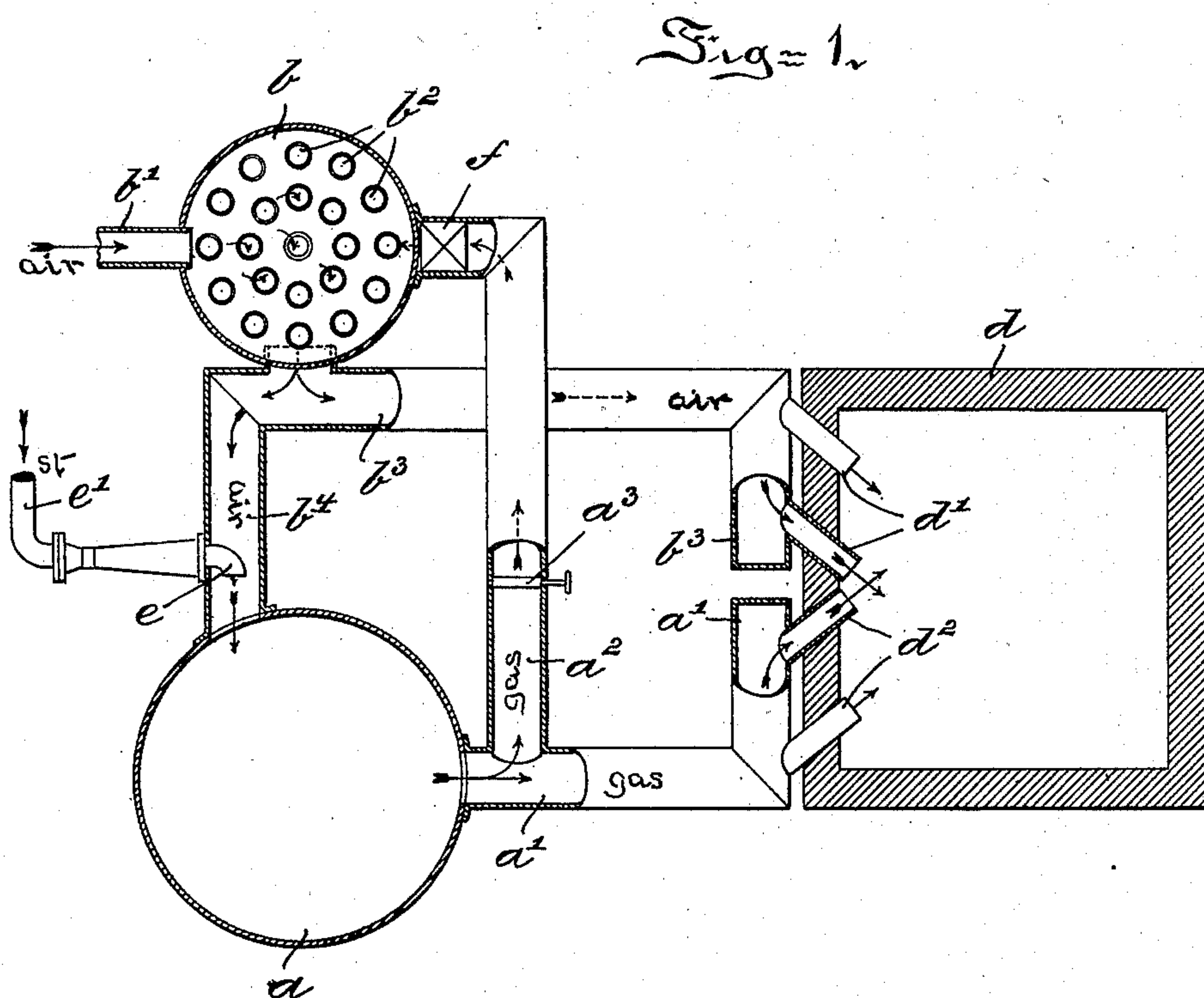
Patented July 24, 1900.

E. A. W. JEFFERIES.
GAS PRODUCER.

(Application filed Nov. 8, 1899.)

(No Model.)

2 Sheets—Sheet 1.



Witnesses:

Richard C. Mapwell
Thomas M. Smith.

Inventor:
Eugene A. W. Jeffries,
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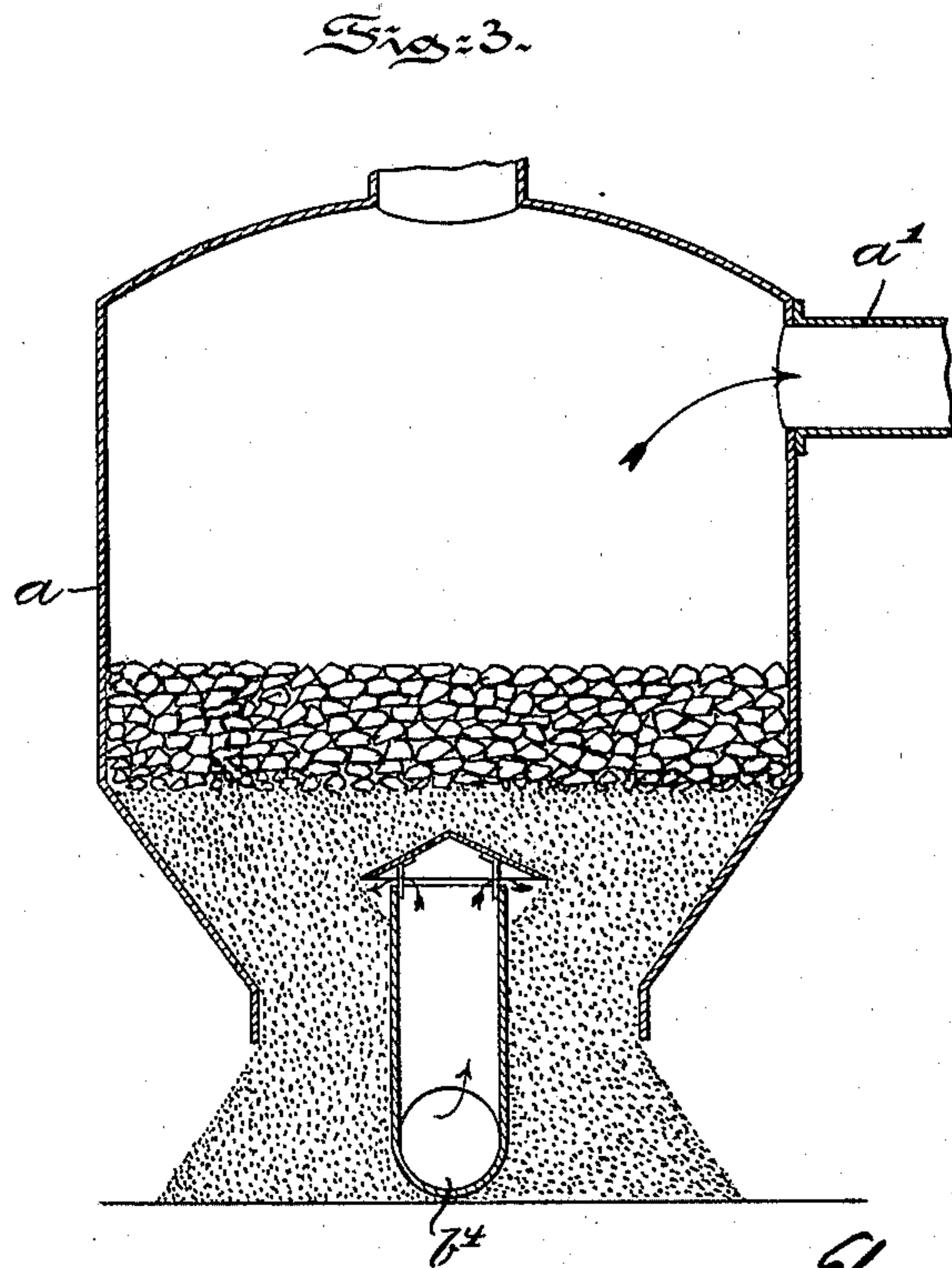
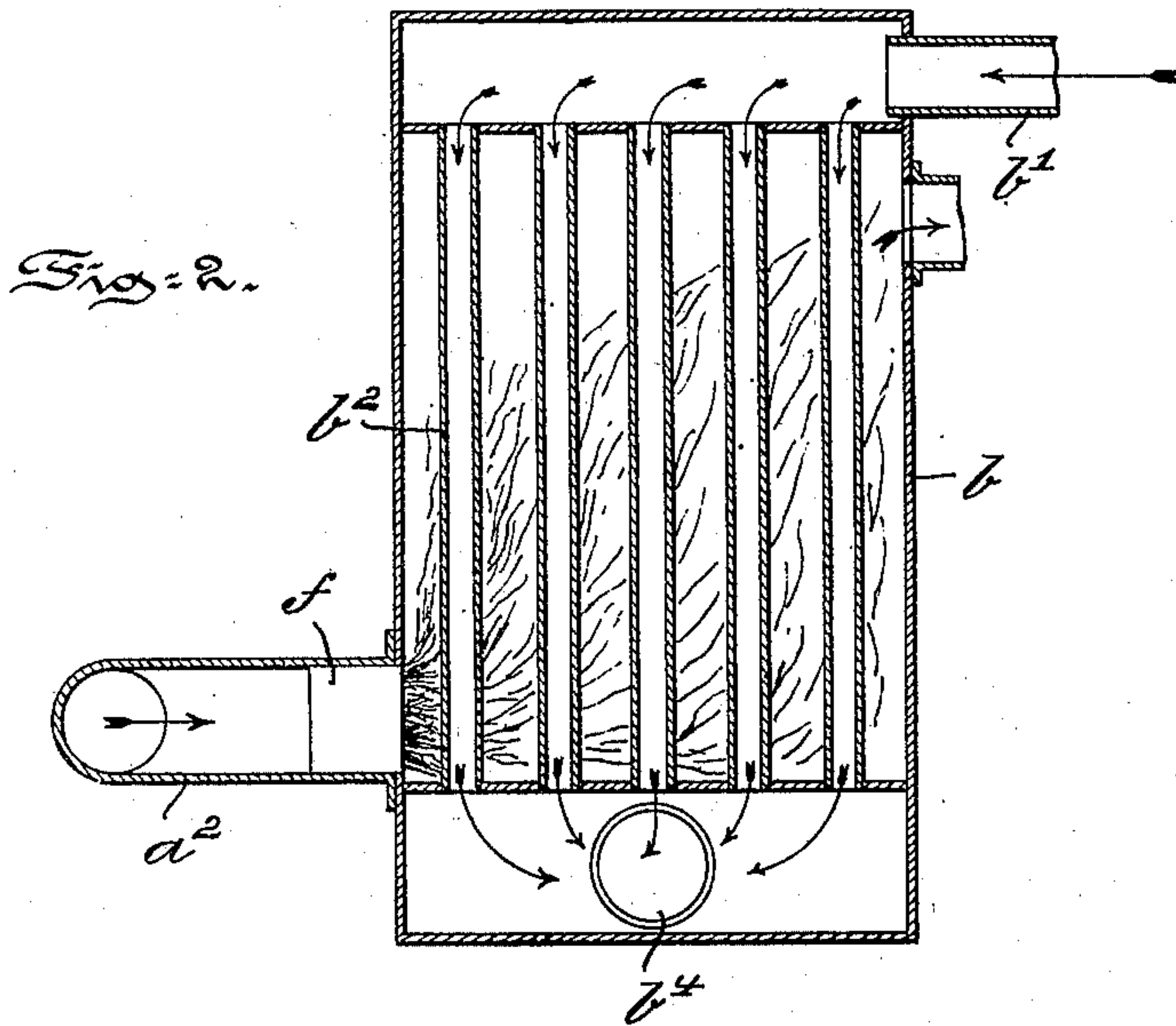
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(Application filed Nov. 8, 1899.)

(No Model.)

2 Sheets—Sheet 2.



Witnesses:
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UNITED STATES PATENT OFFICE.

EBENEZER A. W. JEFFERIES, OF DETROIT, MICHIGAN.

GAS-PRODUCER.

SPECIFICATION forming part of Letters Patent No. 654,456, dated July 24, 1900.

Application filed November 8, 1899. Serial No. 736,222. (No model.)

To all whom it may concern:

Be it known that I, EBENEZER A. W. JEFFERIES, a citizen of the United States, residing at the city of Detroit, in the county of Wayne and State of Michigan, have invented certain new and useful Improvements in Apparatus for Utilizing Producer-Gas, of which the following is a specification.

My invention has relation to an apparatus for the utilization of producer-gas, and in such connection it relates more particularly to the construction and arrangement of such an apparatus.

The principal object of my invention is to use in conjunction with a gas-producer a continuous air-heating stove heated by gas from said producer and a furnace into which gas from the producer and hot air from the stove are introduced and commingled prior to combustion in said furnace, the gas-producer itself being also supplied with hot air drawn from the stove, which hot air is commingled with steam prior to its entrance into the producer.

In the carrying into effect of my invention there is provided in conjunction with a gas-producer, preferably of the ordinary type, a continuous air-heating stove and a furnace wherein the gas from the producer and hot air from the stove are commingled prior to combustion to heat the furnace, the stove having two ducts, one for conducting hot air to the furnace and the other communicating with a steam-injector blower adapted to feed a portion of the hot air commingled with the steam to the base of the gas-producer, and said gas-producer having a divided outlet for gas, one branch of said outlet leading to the furnace and the other branch of said outlet leading to a burner adapted to heat the air-heating stove.

The nature, scope, and characteristic features of my invention will be more fully understood from the following description, taken in connection with the accompanying drawings, forming part hereof, and in which—

Figure 1 is a diagrammatic view of an apparatus embodying main features of my invention. Fig. 2 is a vertical sectional view taken on the line *x x* of Fig. 1, and Fig. 3 is a similar view taken on the line *y y* of Fig. 1.

Referring to the drawings, *a* represents the

gas-producer, *b* the continuous air-heating stove, and *d* the furnace wherein hot air from the stove *b* and gas from the producer *a* are commingled and burned to heat said furnace. Leading to the top or coldest portion of the air-heating stove *b* is a pipe *b'*, through which cold air under pressure is forced into the pipes *b²* of the stove. The air after being heated in said stove *b* leaves the same at its base or hottest portion and is diverted into two ducts *b³* and *b⁴*. One of these ducts *b³* leads directly to the furnace *d* and discharges through the outlets *d'* *d'* into said furnace. The other duct *b⁴* leads directly to the blast of the gas-producer *a*, and in this duct is introduced the nozzle *e* of a steam-pipe *e'*, forming a steam-injector blower adapted to inject hot air from the stove *b* and steam from the nozzle *e* into the blast of the gas-producer. The gas-producer *a* has a divided outlet with two offtake ducts or branches *a'* and *a²*, one branch *a'* leading directly to the furnace *d* and discharging gas through suitable outlets *d²* *d²* into the furnace *d* and the other branch *a²* conducting the gas from the producer to a burner *f*, which is adapted to heat the stove *b*. The branch *a²* is preferably provided with a valve *a³*, by means of which the flow of gas to the burner of the stove *b* may be regulated. The burner of the stove may be of any type, and the construction of the stove *b* may vary in minor particulars, provided the stove be of the type known as a "continuous air-heating" stove, in which the air entering at the coldest portion of the stove is forced through the stove under pressure and leaves the stove at its hottest portion. The air-outlets *d'* *d'* and the gas-outlets *d²* *d²* are preferably arranged in converging form, so as to cross the currents of gas with currents of air, and thus commingle the gas and air prior to their consumption in the furnace.

Having thus described the nature and object of my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In an apparatus for utilizing producer-gas, the combination of a gas-producer, a continuous air-heating stove and a furnace, wherein gas from the producer and air from the stove are adapted to be commingled and burned, with an additional air-duct leading from the stove to the blast of the gas-pro-

ducer, a steam-injector blower located in said last-mentioned air-duct and adapted to force the hot air and steam from said duct into said producer, and a divided outlet for gas from 5 said producer, one branch of which leads to the furnace and the other branch to the air-heating stove, substantially as and for the purposes described.

2. In an apparatus of the character described, a gas-producer, a continuous air-heating stove, means for forcing air through said stove to heat the same, a furnace, an air-duct adapted to convey hot air from the stove to the furnace, a gas-duct adapted to 15 lead gas from the producer to the furnace, a

second gas-duct adapted to supply the burner of the stove, a second air-duct leading from the stove to the blast of the gas-producer and a steam-injector blower located in the second air-duct and adapted to force the hot air in 20 said duct and steam from the injector into the blast of said gas-producer, substantially as and for the purposes described.

In testimony whereof I have hereunto set my signature in the presence of two subscrib- 25 ing witnesses.

EBENEZER A. W. JEFFERIES.

Witnesses:

J. WALTER DOUGLASS,
THOMAS M. SMITH.