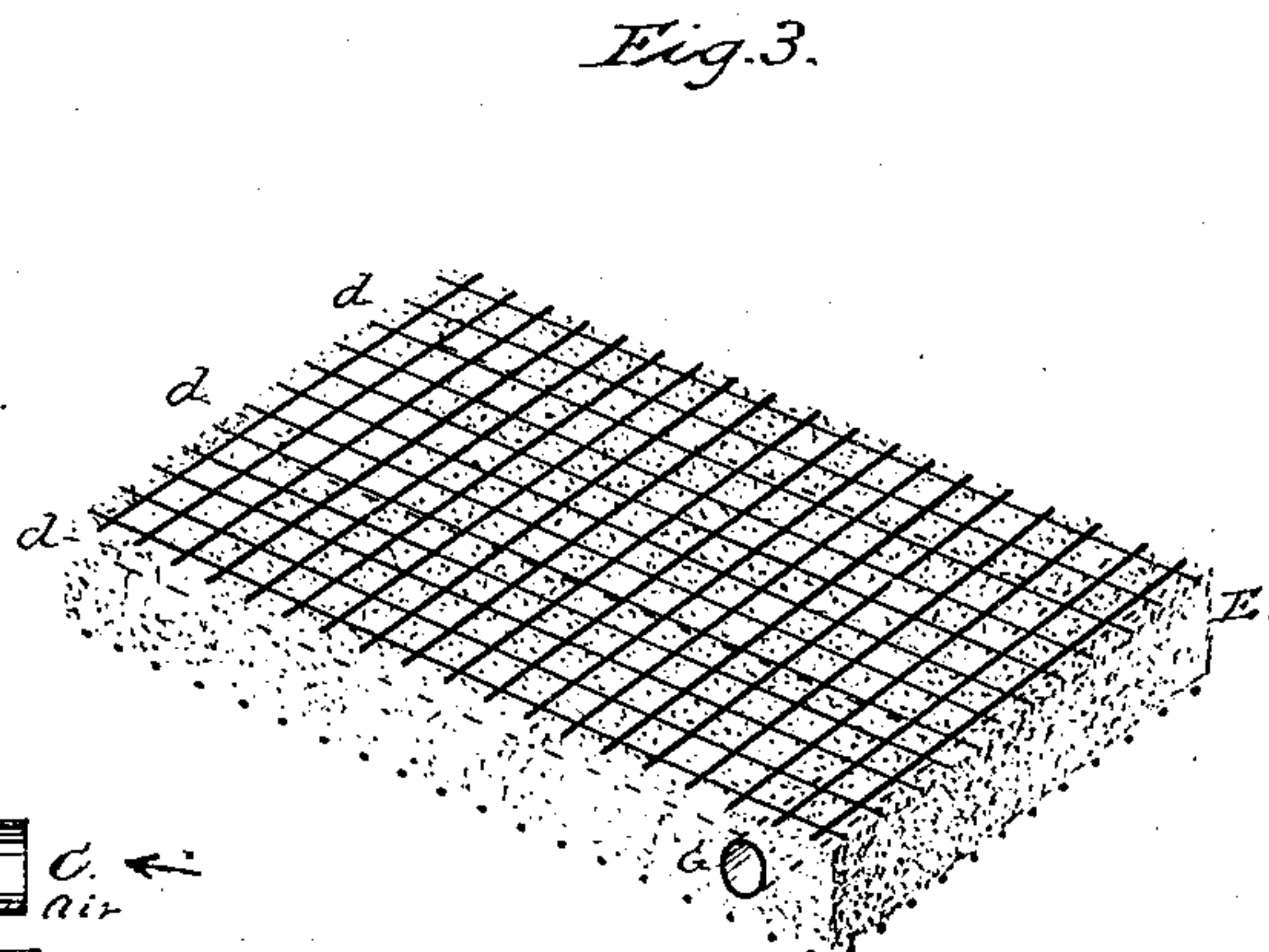
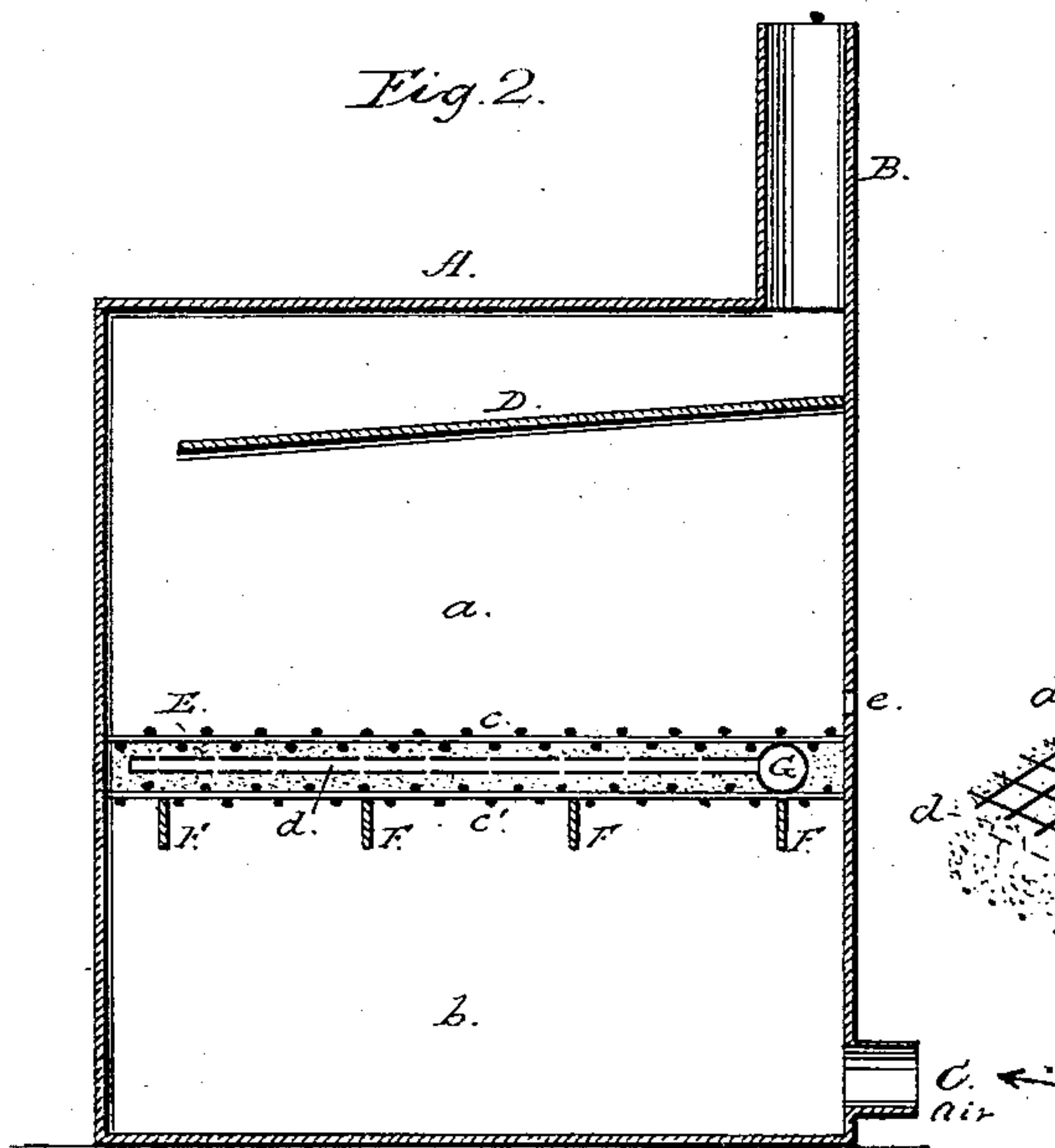
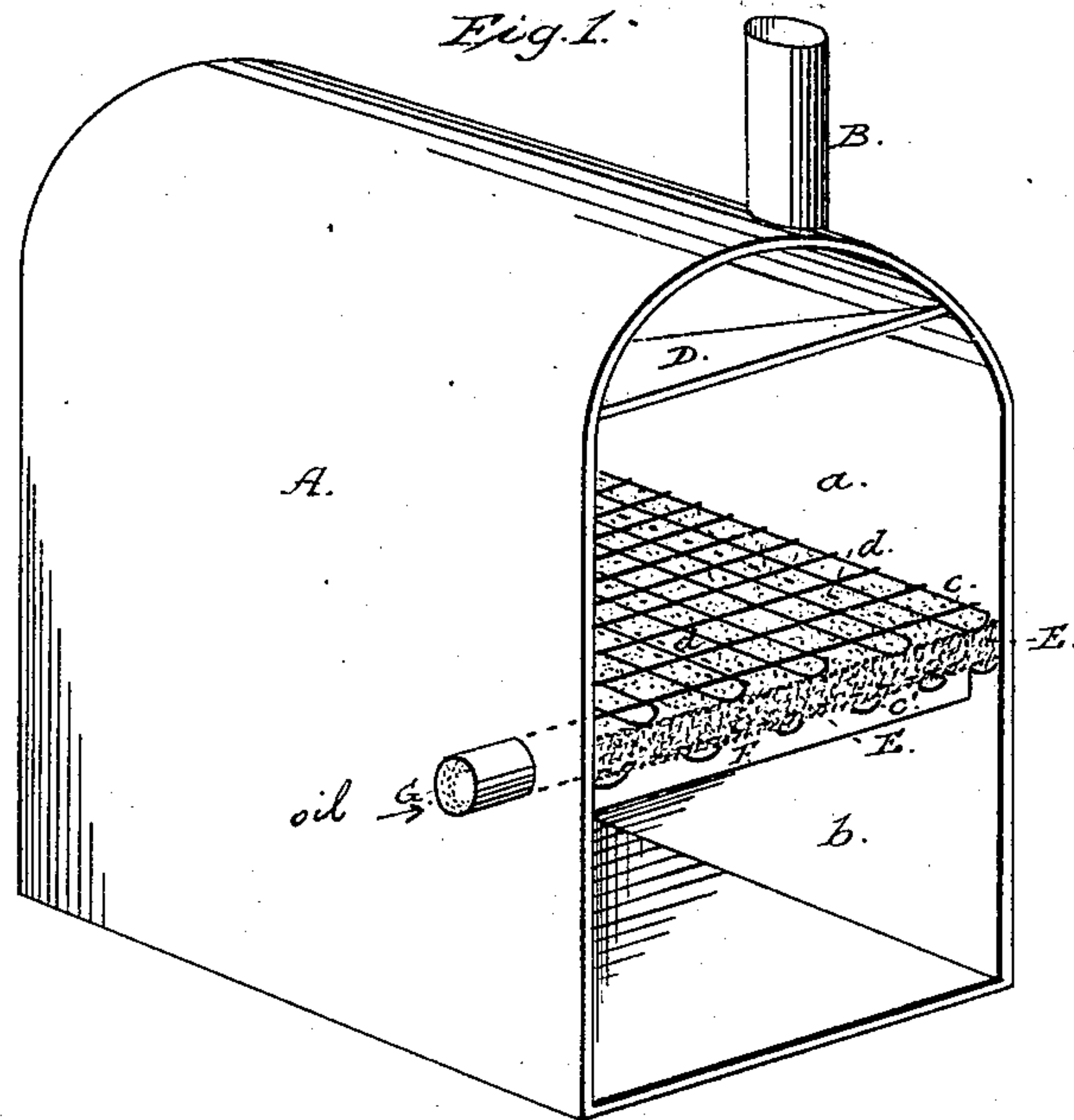


(No Model.)

D. B. HUBBARD.
HYDROCARBON FURNACE.

No. 260,983.

Patented July 11, 1882.



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UNITED STATES PATENT OFFICE.

DAVID B. HUBBARD, OF WILLIAMSPORT, PENNSYLVANIA.

HYDROCARBON-FURNACE.

SPECIFICATION forming part of Letters Patent No. 260,983, dated July 11, 1882.

Application filed May 18, 1881. (No model.)

To all whom it may concern:

Be it known that I, DAVID B. HUBBARD, of Williamsport, in the county of Lycoming and State of Pennsylvania, have invented a new and useful Improvement in Hydrocarbon-Furnaces; and I do hereby declare that the following is a full and exact description of the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

The object of my invention is the utilization of fluid hydrocarbons in a more effective manner for the generation of heat; and it consists in the process or method employed in generating heat; in a fibrous incombustible fire-bed adapted to be saturated with hydrocarbons; in the combination of such a fire-bed intermediate between an air-pressure chamber and a combustion-chamber, and in the other operative combinations of the several parts of the apparatus, all as more fully hereinafter described.

To better understand my invention, reference may be had to the accompanying drawings, in which Figure 1 is an elevation in perspective of a furnace suitable for my invention, the front of the same being removed; Fig. 2, a longitudinal vertical section of the same, and Fig. 3 a detached view of the same.

Similar letters denote like parts in each figure.

As the gist of my invention consists in the method of generating heat by the employment of a fibrous non-combustible fire-bed adapted to be kept saturated with hydrocarbons and subject to air-pressure, and is applicable to a great variety of heat-generating apparatus without further invention, I do not wish to be confined to any particular apparatus, and describe the following apparatus as one in which my method or process may be employed.

In the drawings, A represents a furnace adapted simply for the generation of heat which would be radiated from the walls of the combustion-chamber, in which are a combustion-chamber, *a*, and an air-pressure chamber, *b*, a funnel or smoke-stack, B, rising out of the first, and a pipe, C, for the supply of air under pressure, entering the front of the second.

A deflector, D, is shown in the combustion-chamber, to deflect the products of combustion

to the rear and then to the front to the exit-stack or smoke-pipe.

The fire-bed E is arranged between the combustion and air-pressure chambers, and is composed of fibrous non-combustible material, preferably what is known in the market as "mineral wool," this wool being such as will allow of the free passage of air through it, with wire-netting *c c'* or other suitable means above and below to retain the fiber in place, and preferably in the form of a thick sheet or mattress. This fire-bed rests and is supported upon suitable bars, F.

A pipe, G, for the supply of fluid hydrocarbons, passes through the walls of the furnace into the fire-bed, and is supplied with perforated branch pipes *d*. A suitably-covered opening, *e*, in the front of the furnace affords means for lighting and also for inspection of the interior of the combustion-chamber.

It will be understood that this furnace is completely closed, except so far as stated.

In operation, the fire-bed being in position and supplied with a flow of hydrocarbons, preferably some of the coal-oils or petroleum, and an air-pressure applied in any suitable way in the air-pressure chamber, fire is applied to the fire-bed. The operation, then, of the air-pressure chamber is to supply a body of air under pressure to the under side of the fire-bed, which air is carbureted in its passage through the material of which the fire-bed is made, which is saturated with the hydrocarbons, and the result is a steady, equable, constant flame of great heat all over and above the fire-bed. The fibrous material, being incombustible, is consequently very durable, and a fire may be maintained for a great length of time without renewal of the fire-bed and without danger of explosion.

It is evident that this method of heating is well adapted for the making of steam, as well as for nearly all the purposes for which heat may be applicable.

Having thus described my invention, what I claim as new therein is—

1. The process or method of generating heat by the passage of air under pressure through a fibrous incombustible fire-bed saturated with fluid hydrocarbons, substantially as described.

2. A fire-bed composed of such fibrous in-

combustible material as will allow of a free passage of air through it, said fire-bed being provided with means, substantially as shown, for saturating it with fluid hydrocarbons, substantially as described.

5 3. In a heat-generating apparatus, the combination of the following elements, viz: a combustion-chamber, an air-pressure chamber, and an intermediate fire-bed composed of fibrous

non-combustible material, substantially as described.

This specification signed and witnessed this 16th day of May, A. D. 1881.

DAVID B. HUBBARD.

Witnesses:

FRANK H. McCORMICK,
S. T. McCORMICK.