

No. 717,177.

Patented Dec. 30, 1902.

J. A. DRAKE.
REGENERATIVE FURNACE.

(Application filed June 2, 1902.)

(No Model.)

FIG. 1.

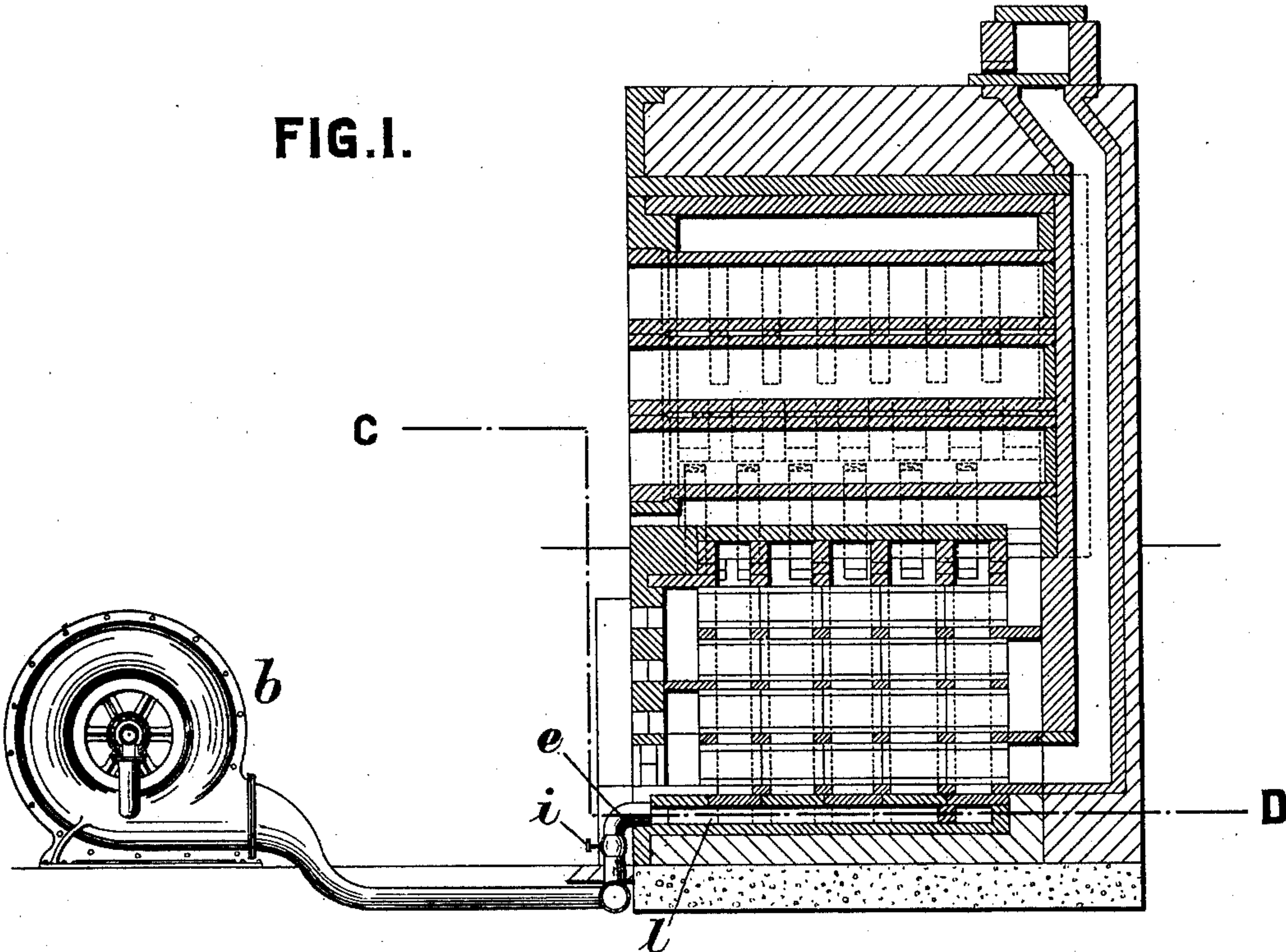
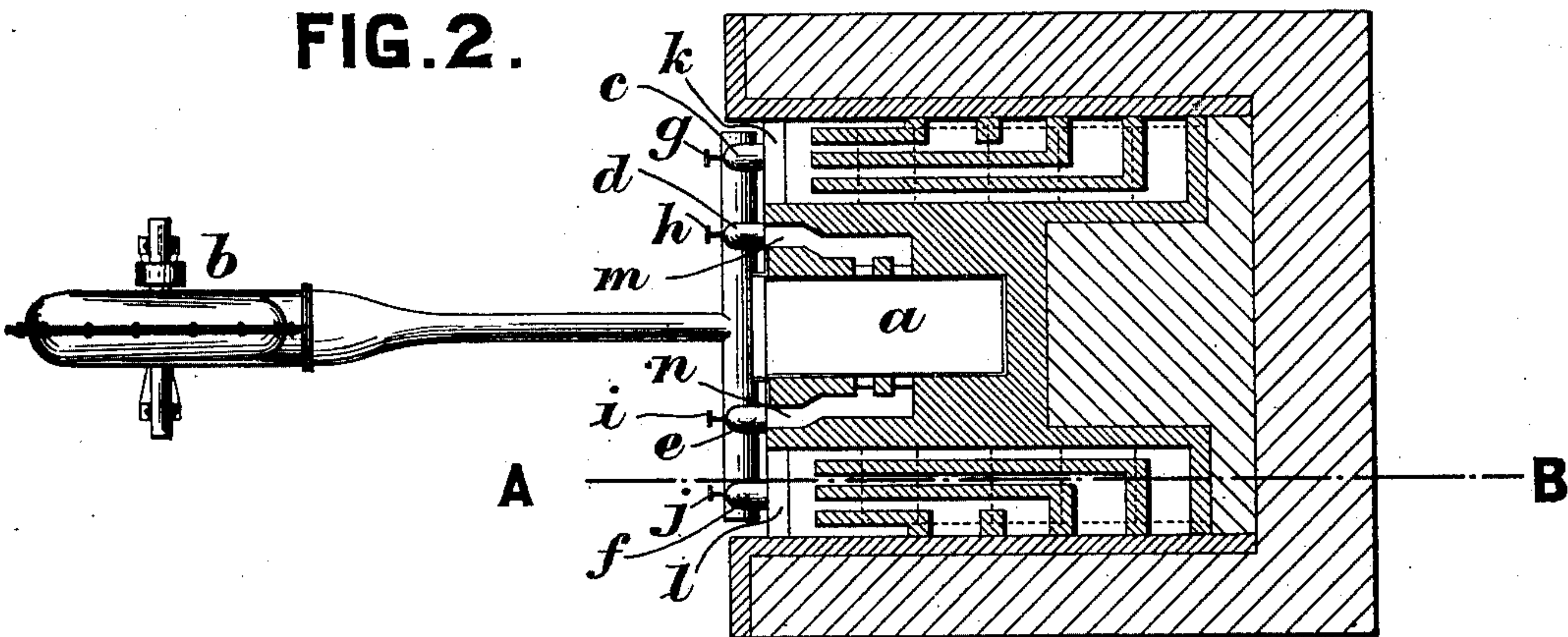


FIG. 2.



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UNITED STATES PATENT OFFICE.

JOHN ARMITAGE DRAKE, OF HALIFAX, ENGLAND.

REGENERATIVE FURNACE.

SPECIFICATION forming part of Letters Patent No. 717,177, dated December 30, 1902.

Application filed June 2, 1902. Serial No. 109,862. (No model.)

To all whom it may concern:

Be it known that I, JOHN ARMITAGE DRAKE, residing at Halifax, in the county of York, England, have invented certain new and useful Improvements in Regenerative Furnaces; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

The object of my invention is to overcome certain difficulties in gaseous firing, the said invention being particularly applicable to generator and regenerator or recuperative furnaces.

It is well known that under the present system of chimney-draft to overcome the friction caused by the passage of the air through the recuperator-chambers the pull or vacuum operates directly upon the producer, the effect of which is to burn an unnecessarily large quantity of fuel, while clinker is formed to excess.

By my invention I apply forced draft to both the primary and secondary air-flues, and I may also in some cases where found necessary or desirable use induced draft in addition. The power may be obtained by steam injection or any suitable fan, blower, or other mechanical means necessary to insure a regular supply of secondary air for the purpose of effecting complete combustion in the combustion-chamber, furnace, oven, or kiln, as the case may be, and thus relieve the combustion-chamber and producer of the strong draft which has previously been found necessary, means being provided whereby the forced draft may be applied to the producer for the evolution of combustible furnace-gases, if found desirable. The inlet-pipes are fitted with valves or cocks in order to control the supply and allow of adjustment to suit the varying temperatures required.

By my invention it is practicable to give a much greater amount of traverse to the air in recuperator-chambers and to break up the air by passing same through perforations to a much greater extent than could formerly be done, whereby the air is more thoroughly heated, with an economy in fuel and reduction in the amount of clinker formed.

The method of supplying secondary air by forced or induced draft may be applied to all classes of furnaces where varying or high temperatures are required.

In order that my invention may be more clearly understood, I append hereto an explanatory sheet of drawings illustrating a method of carrying out the same, the improvements being applied to a recuperative furnace suitable for gas-retorts.

Figure 1 is a sectional elevation taken partially on the line A B of Fig. 2. Fig. 2 is a sectional plan taken on line C D of Fig. 1.

Letter *a* represents the furnace; *b*, the blower; *c d e f*, the air-pipes from the blower, which terminate opposite the air-inlets; *g h i j*, the valves controlling the air-supply. By opening valves *g* and *j* and closing valves *h* and *i* the forced draft can be applied to the secondary air-inlets *k l*, while the primary air-inlets *m n* are supplied with free atmospheric air through suitable sliding shutters. By opening valves *h* and *i* and closing valves *g* and *j* the forced draft may be applied to the primary air-inlets *m n*, while the secondary air-inlets receive air freely from the atmosphere. All the four valves may be opened together or all may be closed and the fan or blower stopped when no forced draft is required.

I claim as my invention—

The combination, with a regenerative furnace-chamber provided with primary air-inlets *m* and *n* arranged one on each side of it and having also secondary air-inlets *k* and *l* arranged on each side of the said primary air-inlets; of a main air-supply pipe arranged cross-wise of the said furnace below all the said air-inlets, separate branch air-pipes provided with valves and connecting the said main air-pipe with all the said air-inlets, and means for forcing air into the middle part of the said main air-pipe between the said branch pipes which are connected to the said primary in-

lets, substantially as described and shown.

In testimony whereof I affix my signature in presence of two witnesses.

JOHN ARMITAGE DRAKE.

Witnesses:

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