

No. 675,245.

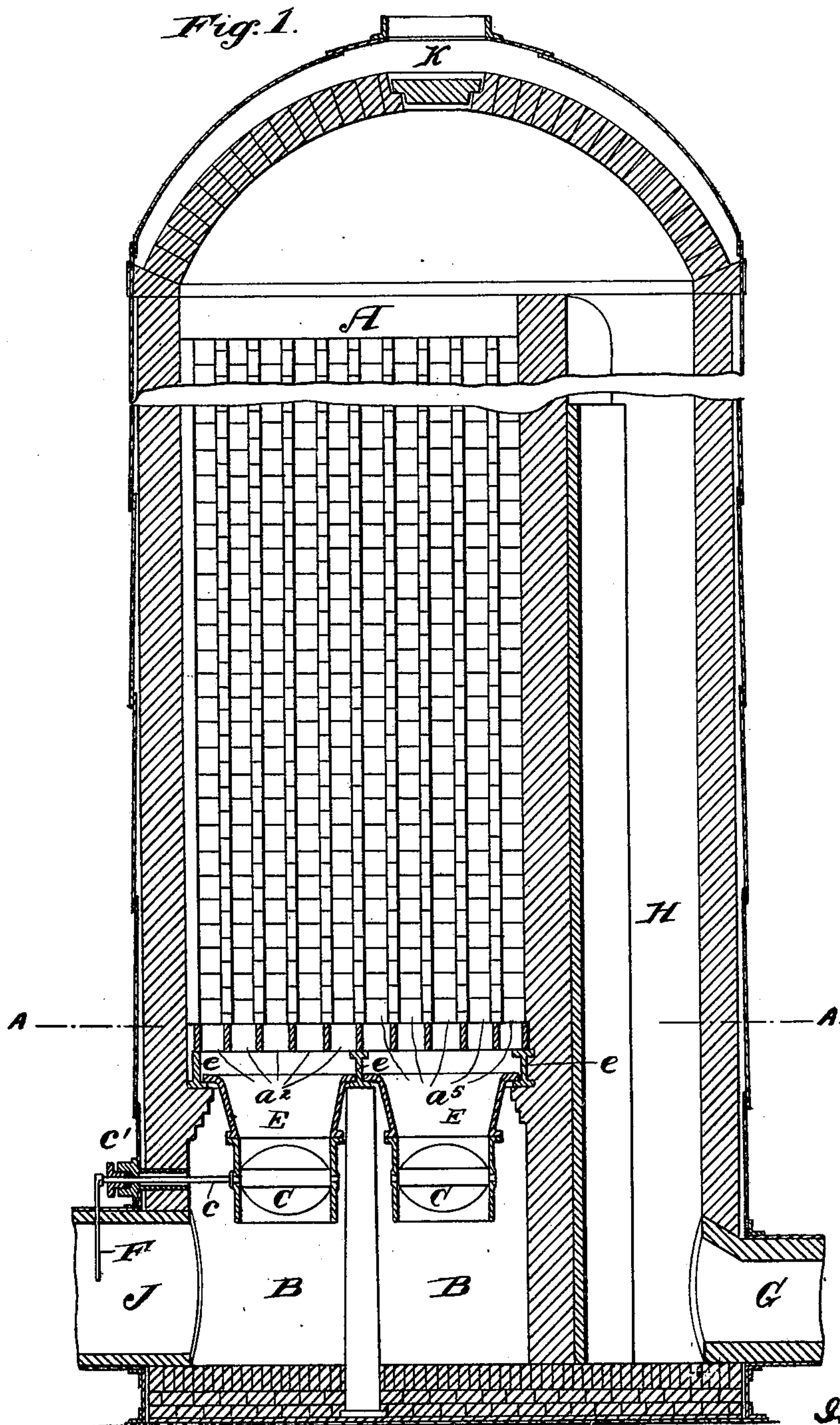
Patented May 28, 1901.

E. J. W. RICHARDS & T. LEWIS.
MEANS FOR CLEANING HOT BLAST STOVES.

(No Model.)

(Application filed Jan. 2, 1901.)

3 Sheets—Sheet 1.



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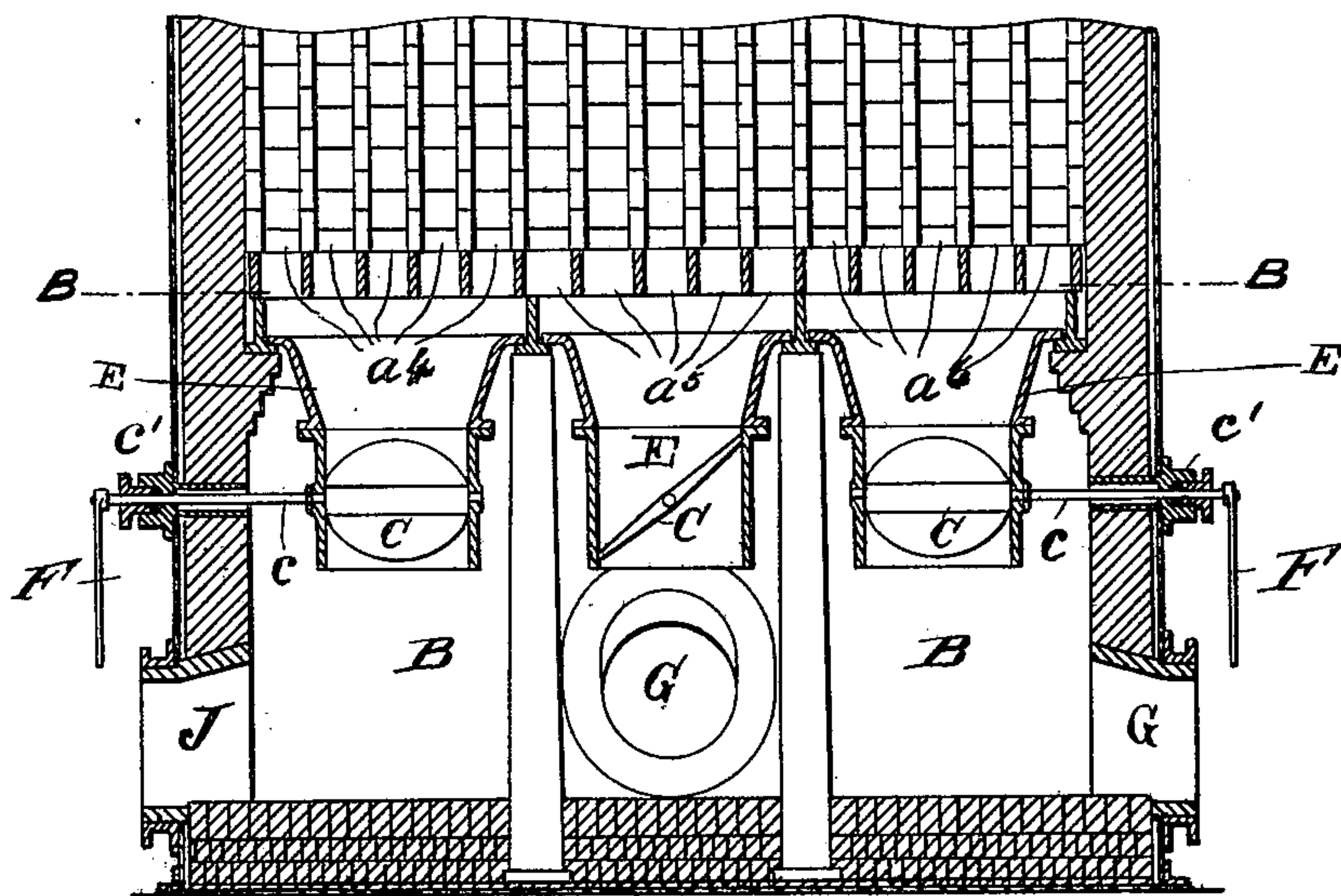
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Fig. 2.



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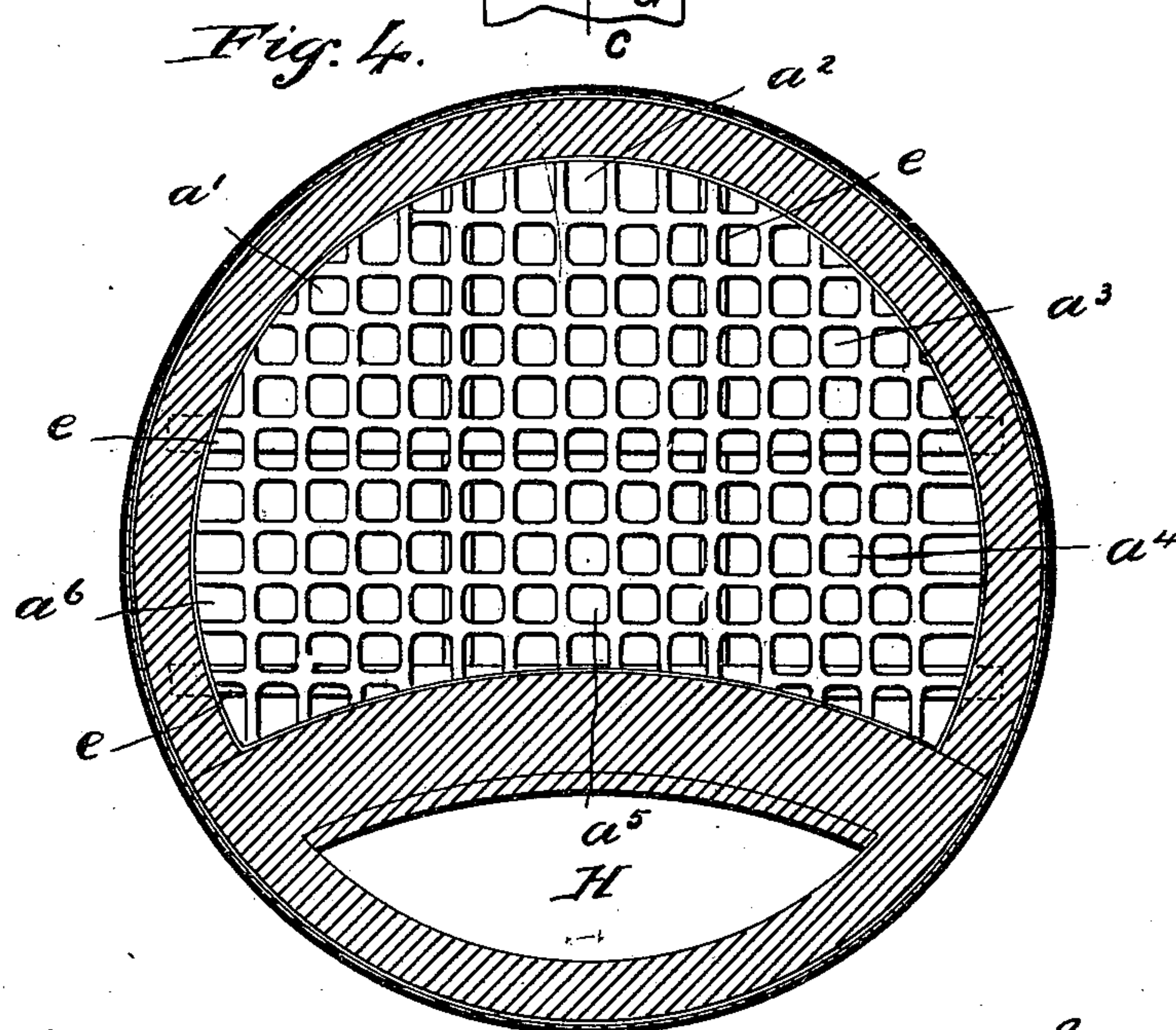
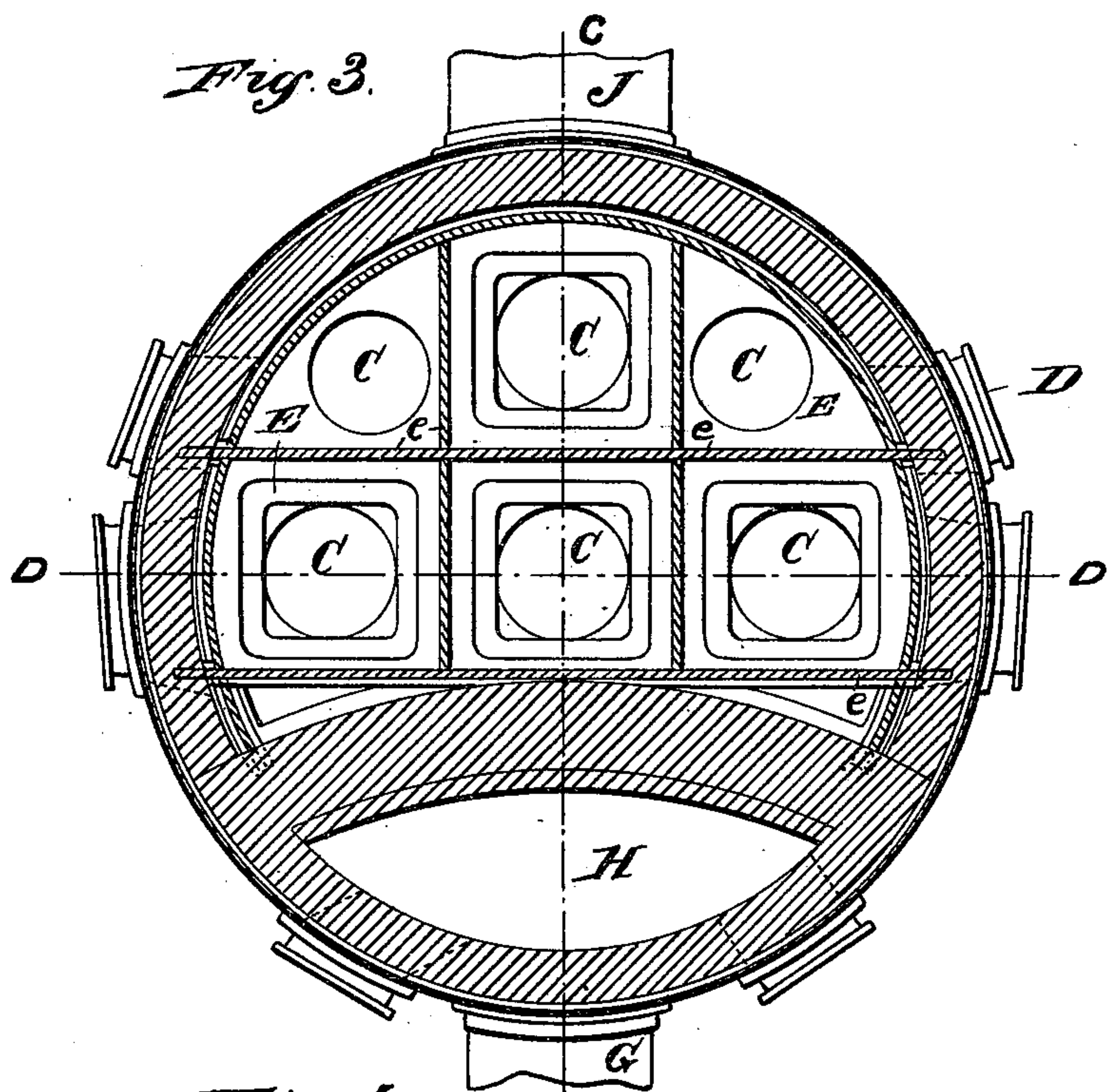
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UNITED STATES PATENT OFFICE.

EDGAR JOSIAH WINDSOR RICHARDS AND THOMAS LEWIS, OF GLENGARNOCK, SCOTLAND.

MEANS FOR CLEANING HOT-BLAST STOVES.

SPECIFICATION forming part of Letters Patent No. 675,245, dated May 28, 1901.

Application filed January 2, 1901. Serial No. 41,873. (No model.)

To all whom it may concern:

Be it known that we, EDGAR JOSIAH WINDSOR RICHARDS, general manager, residing at "Cottage," and THOMAS LEWIS, engineer, residing at Garnockside Cottages, both of GLENGARNOCK, county of Ayr, Scotland, subjects of the Queen of the United Kingdom of Great Britain and Ireland, have invented a means for cleaning and keeping clear the honeycomb filling of hot-blast stoves, for regulating the draft in and heating of such stoves, and for regulating or controlling the blast, of which the following is a specification.

This invention relates to improvements in hot-blast stoves of that type known as "Cowper's," in which a vertically-arranged honeycomb filling is employed, the flame resulting from the ignition of the waste gases from the blast-furnaces in admixture with air first ascending a flame-flue, then descending the said honeycomb filling, and finally escaping to the chimney-flue.

In practice it has been found that the quantity of dust in the waste gases issuing from the blast-furnaces so accumulates within the honeycomb filling that in the course of time all the passages become completely choked, the heating of the stove being thus daily impaired until the stove finally becomes useless.

The first object of our invention is therefore to effectively clean the passages in the honeycomb filling should they by an oversight have become choked, which cleaning cannot be performed under the existing construction without "laying off" the stove, and to enable the said passages to be kept perfectly free when once cleaned; also to regulate the draft or heating of such stoves and regulate the blast.

In order that our said invention may be more readily understood and easily carried into effect, we will proceed to describe the same with reference to the accompanying drawings, in which—

Figure 1 is a vertical section taken on the line C C, Fig. 3, of a stove constructed in accordance with our invention, a portion at the center being broken away. Fig. 2 is a similar view to the lower end of the stove, taken on the line D D, Fig. 3. Fig. 3 is a cross-section taken on the line B B, Fig. 2; and

Fig. 4 is a similar view taken on the line A A, Fig. 1.

Referring to the said drawings, in lieu of introducing the cold-air blast direct into the heated honeycomb filling A of the stove we cause the said blast to enter the chamber B, situated below the said filling, which chamber is fitted with equilibrium-valves C of any suitable form—say six in number—through which the air can pass. The cold-air blast may enter the chamber B by the duct D, Fig. 3, or in any other well-known manner. The upper portion of the said chamber B, with the valves C, thus divides the honeycomb filling into six effective divisions $a' a^2 a^3 a^4 a^5 a^6$, through all of which the blast under normal conditions passes. When, however, the passages of the honeycomb become choked, all the valves are first closed, then one after the other rapidly opened and closed, thus causing the whole blast to travel through one-sixth of the passages at a time. The force thus confined to an increment of the whole effectually removes the obstruction, which would not be the case were the blast acting on all passages at once, in which case no more passages would be cleaned than corresponds with the area of the cold-air duct. When once cleaned, the passages can be kept perfectly free by opening the valves in the manner described at stated intervals.

The valves C may be confined within hopper-shaped casings E, supported by H-beams e or the like, as shown, and may be operated by handles F, keyed to the valve-spindles c , which pass through stuffing-boxes c' in the shell and lining of the stove.

The gas and air for heating the stove enter by the duct G or in any other known manner, and after ignition ascend the flame-flue H. By the use of our valve, therefore, the draft or heating of the stove can be regulated at will. Thus by opening, say, two valves at a time one portion of the honeycomb filling corresponding thereto can be heated, after which the said valves are closed and a second pair opened, causing the gases to descend and heat a second section of the passages, and so on, the gases escaping by the chimney-flue J, as usual. The blast also which traverses the heated passages in a direction opposite to

that taken by the gases used in heating same can be regulated to any desired extent by closing the required number of valves.

G is the duct by which the hot blast leaves the stove.

In addition to controlling or regulating the blast the said method of closing one or more of the valves enables the blast to be reduced in temperature to any desired extent without impairing the heating effect of the stove, which when all the valves are again opened will enable the temperature of the blast to be raised to the highest degree capable of being attained.

By the foregoing method of cleaning the dust out of the honeycomb filling the dust can be blown direct into the atmosphere through the cleaning door or manhole K on the top of the stove actuated by means of a suitable valve, thereby effecting the saving of labor and expense in raking out at bottom and re-filling of dust again for disposal, or in lieu of blowing the dust directly into the atmosphere it may, as formerly, be blown through the gas-valve.

We claim—

1. In a hot-blast stove, the combination of the honeycomb filling divided into independent groups, a plurality of casings secured to one end of the filling each casing having a passage connected with a group of the filling, and means in the casings for regulating

and concentrating an air-blast into any one of said groups while the stove is in operation.

2. In a hot-blast stove, the combination with honeycomb filling divided into independent groups, a plurality of casings secured to one end of the filling each casing having a passage connected with the filling, and valves in the passages for controlling the admission of air to the several passages.

3. In a hot-blast stove, the combination with the honeycomb filling, means for dividing said filling into independent divisions or groups, and a plurality of casings secured to one end of the filling each casing having a passage connected with the filling, of a permanent valve for each casing adapted to concentrate the air-blast into its particular division, and to regulate the blast heat and draft of the stove.

4. In a hot-blast stove, the combination of the honeycomb filling, a series of casings secured to one end of the filling thereby dividing the filling into a number of independent divisions, a valve mounted in each of said casings, and means external of the stove for operating the valve.

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