

(No Model.)

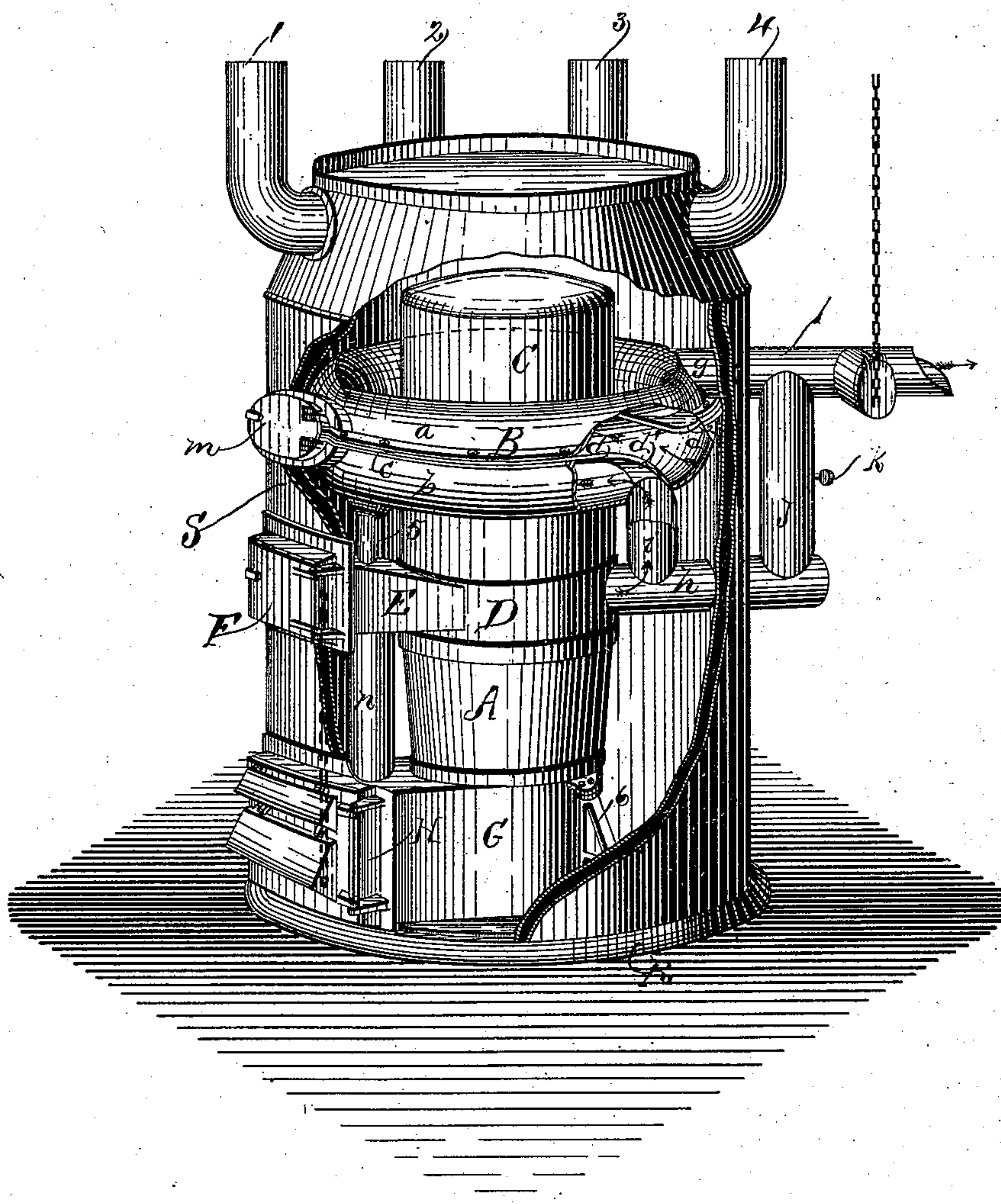
2 Sheets—Sheet 1.

E. KANALEY.
HOT AIR FURNACE.

No. 377,561.

Patented Feb. 7, 1888.

Fig. 1.



WITNESSES:

A. Parsons.
G. W. H. Brown.

INVENTOR

Edward Kanaley.

BY

Wray & Gibbs

ATTORNEYS.

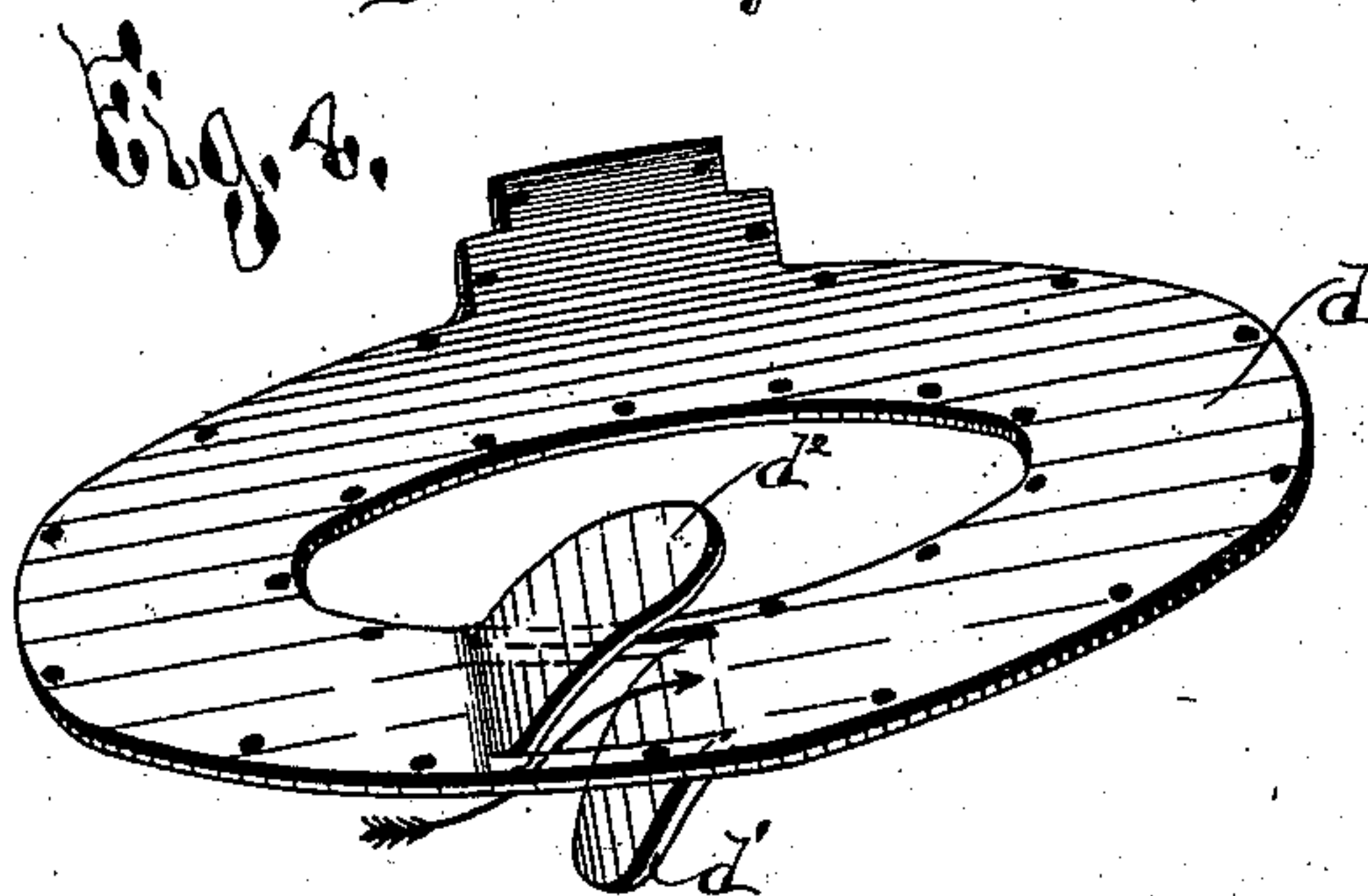
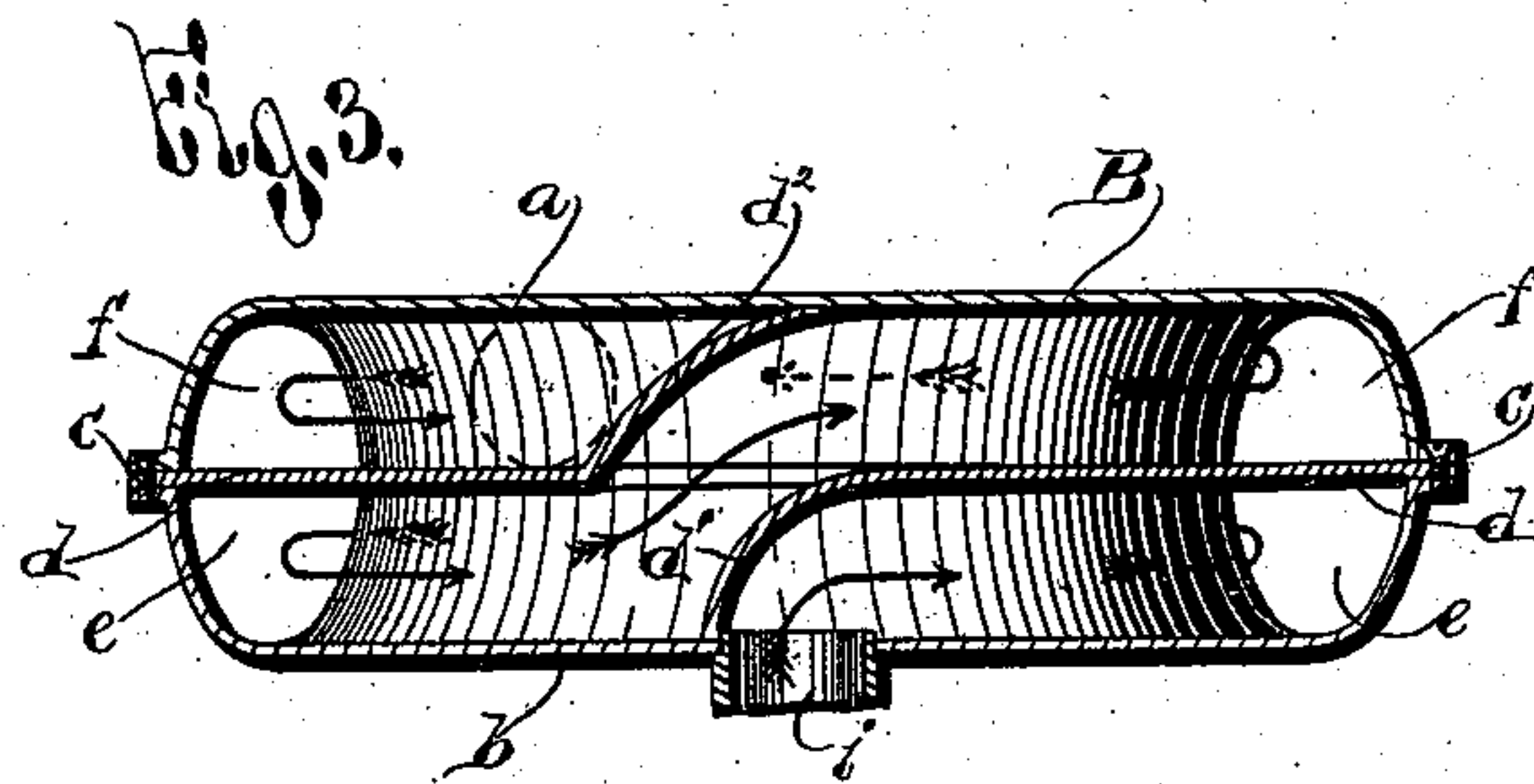
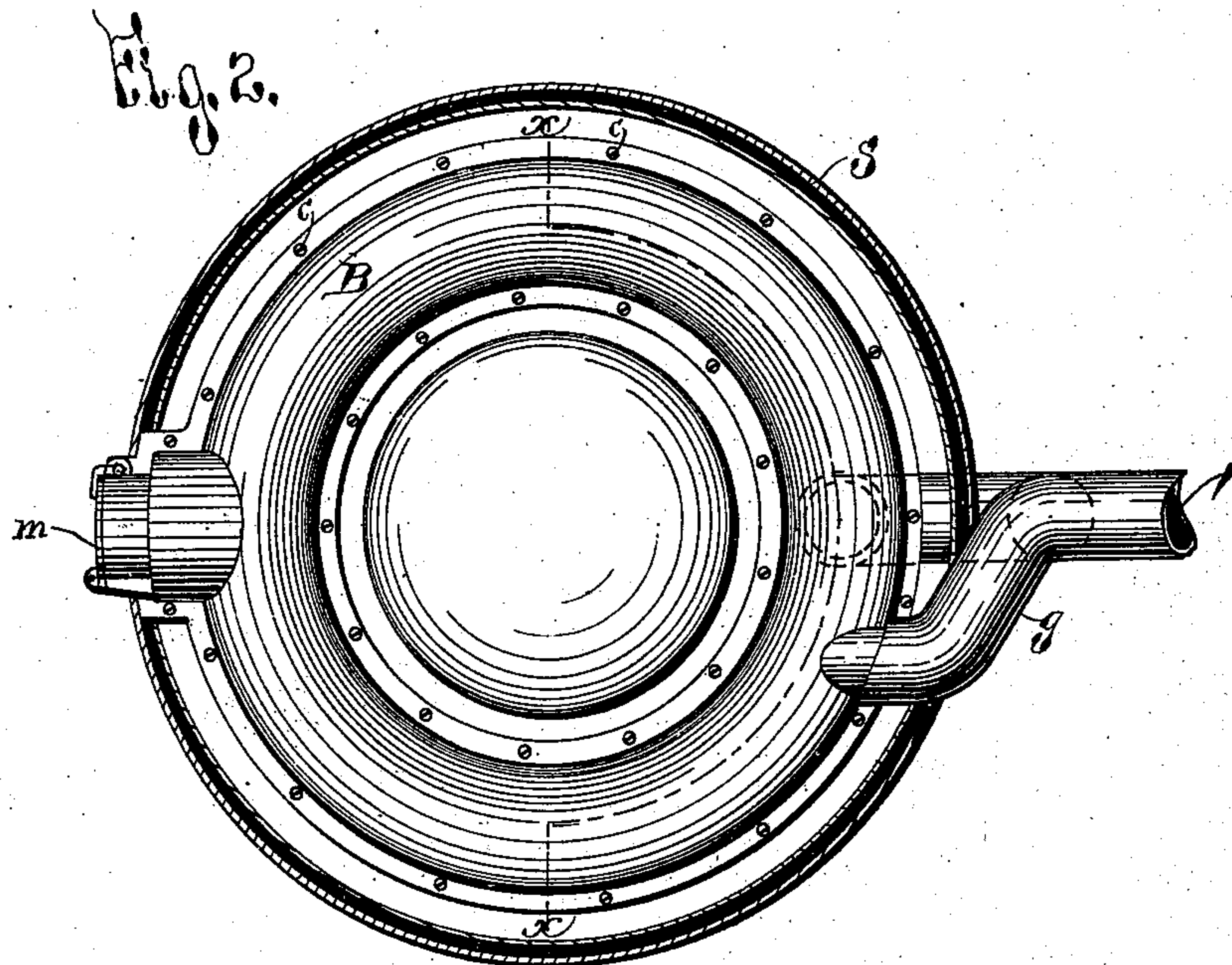
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2 Sheets—Sheet 2.

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No. 377,561.

Patented Feb. 7, 1888.



WITNESSES:

H. C. Parsons,
H. C. MacArthur

INVENTOR

Edward Kanaley

BY

Wm. Gibbs

ATTORNEYS

UNITED STATES PATENT OFFICE.

EDWARD KANALEY, OF SYRACUSE, NEW YORK.

HOT-AIR FURNACE.

SPECIFICATION forming part of Letters Patent No. 377,561, dated February 7, 1888.

Application filed July 18, 1887. Serial No. 244,609. (No model.)

To all whom it may concern:

Be it known that I, EDWARD KANALEY, of Syracuse, in the county of Onondaga, in the State of New York, have invented new and useful Improvements in Hot-Air Furnaces, of which the following, taken in connection with the accompanying drawings, is a full, clear, and exact description.

My invention relates to improvements in hot-air furnaces of the class in which a superposed radiator is employed; and the object of the invention is to so construct and arrange the parts in relation to each other as to overcome the expensive and defective construction of this class of furnaces as heretofore made, in which numerous openings are necessary in the exterior casing to allow for the insertion of cleaning devices to clean out the radiator and at the same time to simplify the construction in order to secure economy in the manufacture; and to this end the invention consists, essentially, in casting the central section of the furnace proper with the feed-chute and direct-draft pipe in one piece, and combining therewith the fire-pot and dome, and a superposed radiator made in two pieces and united by a joint and connected with an indirect and direct draft to the fire-pot and chimney.

It furthermore consists in the detail construction of the radiator and other parts, all as hereinafter more particularly described, and pointed out in the claim.

In specifying my elevation reference is had to the accompanying drawings, in which like letters indicate corresponding parts.

Figure 1 illustrates an invention of my improved hot-air furnace with an outer casing or shell broken away, and a portion of the metal of the radiator broken away for the purposes of illustration. Fig. 2 is a horizontal section of the furnace, showing the superposed radiator in plan. Fig. 3 is a side view of the radiator with the shell broken away or sectioned to show the shape and location of the diaphragm taken on the line *xx* of Fig. 2. Fig. 4 is a detail view of the diaphragm itself.

A is a fire-pot constructed in the usual manner and mounted on the ash-pit G. The central section, D, which sits on the fire-pot A, is cast in one piece with the feed-chute E and the direct-draft pipe *h*.

The feed-chute E is provided with the feed-

door F, constructed and attached in the usual manner.

n is a dust-pipe connecting the ash-pit with the feed-chute E, said pipe permitting the ashes to escape from the ash-pit into the chute, and from thence disseminate into the fire-pot A.

On top of the central section, D, I mount the dome C, and midway between the top of the dome and the top of the central section, D, I place the superposed radiator B. The radiator B is composed of two sections, *a b*, united by a joint, *c*, and provided with the door or opening *m*, which extends through the outer case, S.

The object of casting the radiator B in two sections, *a b*, is to dispense with the use of a core in casting the same, thereby greatly cheapening the production thereof and securing a uniformly thin and smooth casting. Upon the interior of the two-part radiator B, I insert the diaphragm *d*, the said diaphragm having a deflected end, *d'*, over the pipe *i*, and raised end *d''* at its other extremity, for the purpose presently explained.

The radiator B is connected to the direct-draft pipe *h* by the pipe *i*, which enters the radiator immediately below the deflected end *d'* of the diaphragm *d*, and the products of combustion pass from the fire-pot A directly into the radiator B, when the damper *k* in the pipe *j* cuts off communication with the chimney-pipe *l*.

The products of combustion passing into the radiator B from the fire-pot A pass through the lower passage, *e*, in direction of the arrows, around through the lower chamber of the radiator and into the upper chamber, *f*, thence around where they are cut off by the upper end, *d'*, of the diaphragm *d* and enter the indirect-draft pipe *g*, passing from thence into the chimney-pipe *l*.

It will thus be observed that by the herein-described construction the products of combustion are taken through the direct pipe *h*, from thence into the chimney-pipe *l* through the medium of the connecting-pipe *j* when the damper *k* is open, and that when the damper *k* is closed the products of combustion are thrown into the radiator B, and thence through the tortuous passages therein into the indirect pipe *g*, thence to the chimney, and that thereby all of the heat is secured from the fuel, and the furnace made very economical in the use of

fuel, and the best results secured therefrom. Furthermore, in all furnaces of this class, as heretofore constructed, numerous openings in the outer shell or casing, S, were necessary in
5 order to afford access to the radiator to clear the same of soot, and these defects are overcome by providing the large opening *m* in the radiator extending from the casing, as shown in the drawings, which affords convenient ac-
10 cess for both the upper and lower chambers or passages in the radiator, allowing the same to be readily cleared and affording a convenient opening for the desired purpose.

1, 2, 3, and 4 are the hot-air pipes for con-
15 ducting the heat to the various registers. 5 is a brace or support for one end of the radiator B, and the pipe *i* serves as a support for the other end.

The bracket 6 serves as a support for the
20 fire-pot and rim-casing R, while the frame of the ash-pit door H forms the other support for the fire-pot and rim-casing.

It will be observed that my invention pro-
25 vides a hot-air furnace of very simple construction, easy to set up, and most economical in

the use of fuel, since the products of combustion can be controlled and disseminated through the radiator to secure the best results therefrom, while easy access is afforded to all the parts for the purposes of cleaning the same, 30 making the furnace very easy to run in practice and very durable and efficient in use.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent, is— 35

The combination of the central section, D, having the feed-chute E and direct-draft pipe *h* made in one piece with the fire-pot A, dome C, and superposed radiator B, connected to both the direct and indirect draft, substan- 40 tially as and for the purpose set forth.

In testimony whereof I have hereunto signed my name, in the presence of two attesting witnesses, at Syracuse, in the county of Onondaga, in the State of New York, this 14th day of July, 45 1887.

EDWARD KANALEY.

Witnesses:

FREDERICK H. GIBBS,
E. C. CANNON.