

(No Model.)

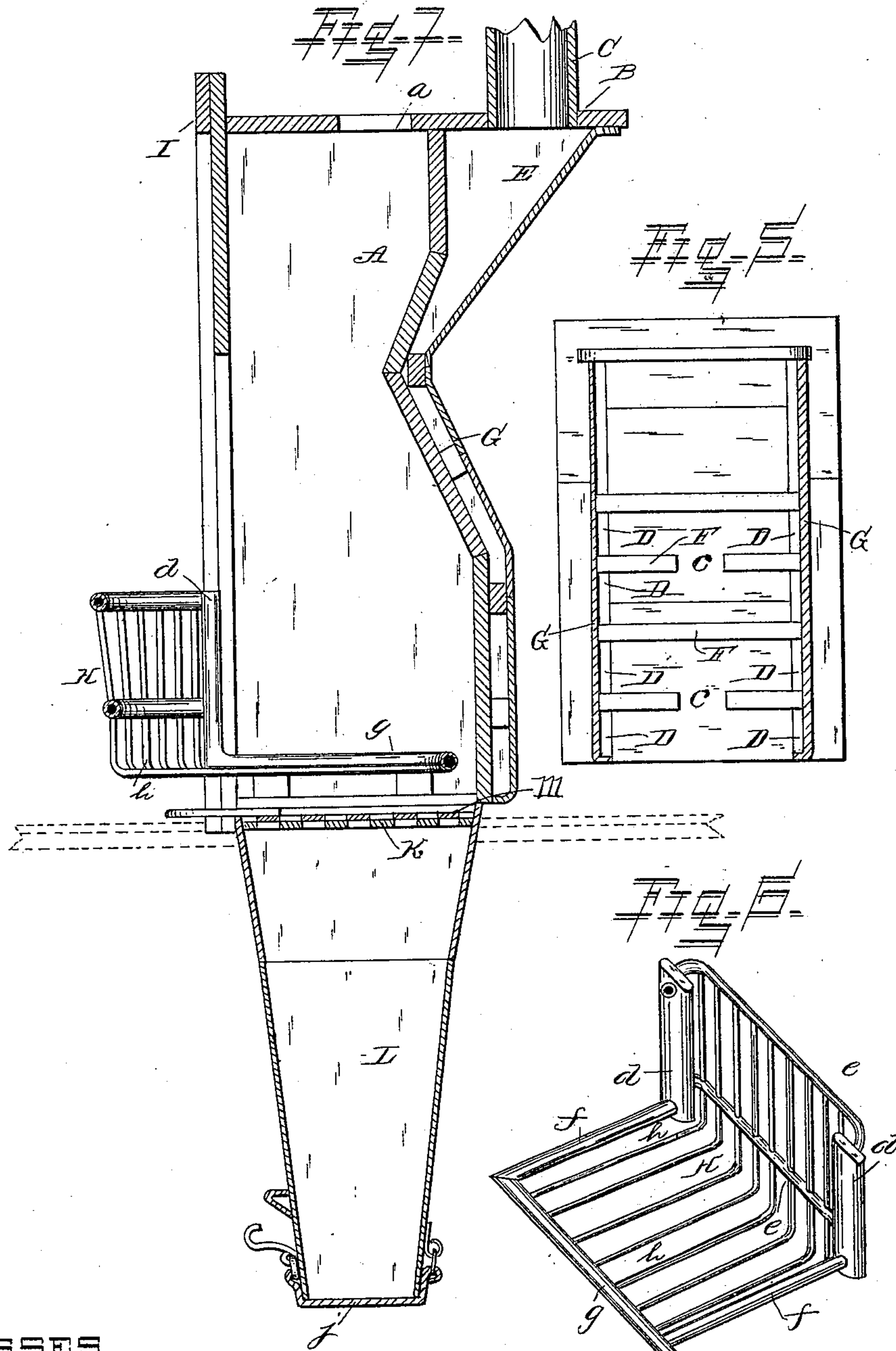
2 Sheets—Sheet 1.

W. A. FRENCH.

HOT AIR FIRE PLACE HEATER.

No. 354,632.

Patented Dec. 21, 1886.



WITNESSES.

Howard J. Schneider.

Alfred T. Gage.

INVENTOR.

W. A. French  
by W. E. Henderson  
his ATTORNEY.

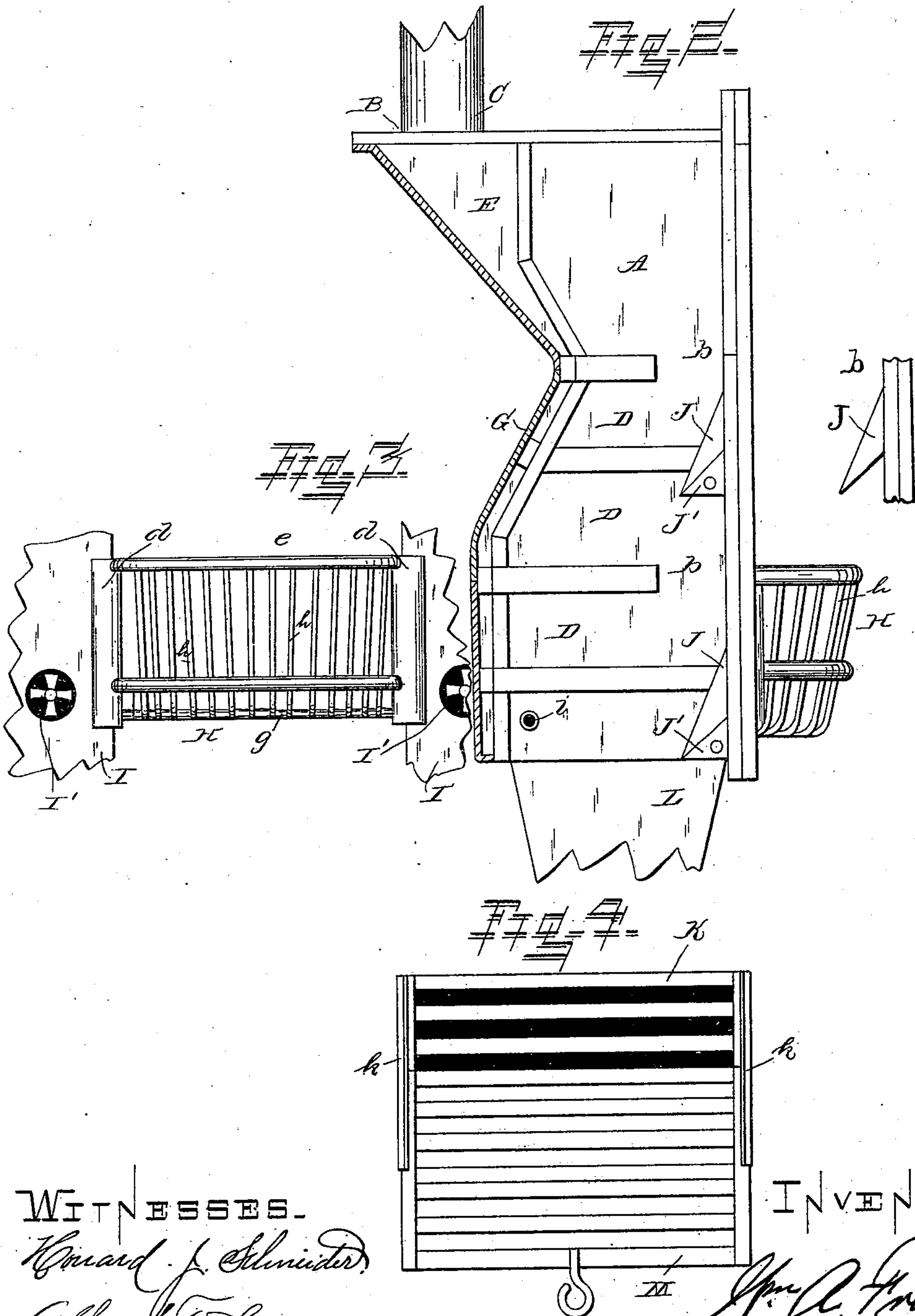
(No Model.)

2 Sheets—Sheet 2.

W. A. FRENCH.  
HOT AIR FIRE PLACE HEATER.

No. 354,632..

Patented Dec. 21, 1886.



WITNESSES.

Howard J. Schneider  
Alfred T. Sage

INVENTOR

W. A. French  
by H. E. Hudson  
his  
ATTORNEY.



# UNITED STATES PATENT OFFICE.

WILLIAM AUGUSTUS FRENCH, OF NARROWS, VIRGINIA.

## HOT-AIR FIRE-PLACE HEATER.

SPECIFICATION forming part of Letters Patent No. 354,632, dated December 21, 1886.

Application filed March 20, 1886. Serial No. 195,916. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM AUGUSTUS FRENCH, a citizen of the United States, residing at Narrows, in the county of Giles and State of Virginia, have invented certain new and useful Improvements in Hot-Air Fire-Place Heaters; 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.

My invention relates to fire-places in which the fire in the grate heats air that is conducted through flues to the upper rooms in the building to heat the same; and it has for its object to simplify the construction of the several parts comprising the heater, and to most effectually heat the air before it passes into the flue running from above the heater to the upper rooms, and has also in view other objects, which will appear from the following description.

In the accompanying drawings, forming a part of the description, Figure 1 is a vertical section through the heater and ash-flue; Fig. 2, a side elevation of the same with a portion of the casing removed to show the arrangement of flues, and with the lower part of the ash-flue broken away. Fig. 3 is a front view of the grate, showing its application to the frame of the heater, portions of the frame being broken away. Fig. 4 is a plan view of the ash-flue with its grated cover partly withdrawn. Fig. 5 is a rear view of the heater, on a reduced scale, with the back of the casing removed to show the arrangement of the flues or passages. Fig. 6 is a perspective of the grate.

In the drawings, the letter A designates the shell of the heater, made of cast-iron or other suitable metal, and formed with an opening, *a*, in its upper portion for the passage of products of combustion to the chimney when the shell is set into the fire-place, and with an extension, B, from which rises a flue, C, that conducts heated air to the desired point—for instance, to an upper room in the building. A series of flues, D, or passages pass around the sides and back of the casing, so as to cause the air to take a zigzag or tortuous course from the lower to the upper portion of the casing before it dis-

charges into a chamber, E, which enlarges from its lower to its upper end, and from which the air heated and stored therein passes into the flue C. These passages are preferably formed by a series of partitions or bars, F, one set of partitions being formed with openings *b* at the sides of the casing, and the other set with openings *c* at the back of the casing.

The partitions and the sides and back of the shell are covered by a sheet or other metallic casing, G, which, in connection with the partitions, forms a series of passages or flues, D, so arranged relatively to each other that the air must pass back and forth in a zigzag course about the sides and back of the heater from bottom to top before it can pass into the storage-chamber E. The consequence is that the air is thoroughly heated before it passes into the flue delivering it into the upper rooms. The air entering these flues is brought from the outside of the building in a fresh and pure state, and is heated before entering the flues by passing through tubular portions of the fire-grate.

The grate H is composed of upright hollow pipes *d*, adapted to fit against the face-plate or frame I of the heater, as shown in Fig. 1, transverse tubes *e* connecting said upright pipes, rearwardly-extending tubes *f* connecting the upright pipes with a transverse tube, *g*, and grate-bars *h*, which may be solid or tubular. The end of the tube *g* is extended so as to pass through the walls of the heater, as shown at *c'*, and connect with a pipe (not shown) leading to the outside of the building, and one of the upright pipes *d* communicates, through an opening in the face-plate or frame I with one of the flues D. Under such construction the air enters at *c'*, passes through tubes *g* and *f* to pipes *d*, across from one pipe through tubes *e* to the other pipe, and thence into the flues D, so that the air is heated before entering the flues, and further heated after entering them. This construction of grate also permits it to be easily put into and taken out of place, and has great capacity for heating the air passing through it.

The face-plate or frame I fits along the sides and across the top of the heater, and is held to its place by tenons J, extending from the plate and having inclined under faces, as



shown, which fit to correspondingly-shaped lugs J', secured to the sides of the heater. By such construction the face-plate is securely held to its place, and can be readily put up  
5 and taken down when the heater is to be taken to pieces or access is desired to any of the parts. The face-plate or frame may also be provided with registers I', for the passage of air from the room into the flues.

10 The ashes from the grate pass through a grated plate, K, which is the bottom of the shell, into an ash chute or flue, L, which may extend into the cellar or to the outside of the building. This chute is provided with a hinged  
15 door, j, at its lower end, which may be kept closed, so as to prevent too strong a draft to the grate, and when ashes are to be dumped or discharged from the chute a grated slide, M, working in ways k, is moved so as to close  
20 the open spaces in the grated plate.

I have shown and described what I consider to be the best construction of the several parts; but I do not restrict myself to the exact details, as it is obvious that changes can be made  
25 without departing from my invention.

The heater constructed as described is simple in its details, and can be put into buildings already constructed or in course of erection at a comparatively little expense.

30 The parts are also constructed with a view to facilitate their easy separation, so that when necessary one part can be replaced by another.

Having described my invention and set forth its merits, what I claim is—

35 1. A hot-air fire-place heater comprising a shell, A, having a series of transverse flues extending across the back and sides of the shell

and communicating, substantially as described, with one another to form a tortuous passage, a chamber, E, at the upper portion of the shell, 40 with which said flues communicate, said chamber enlarging from the bottom to the top, as shown, and a main hot-air flue, C, leading from said chamber, substantially as set forth.

2. In a hot-air fire-place heater, the combination, with a shell, A, having a series of hot-air flues at its back and sides, of a removable grate formed with upright pipes d, adapted to lie against the face of the shell, as described, a transverse tube connecting said pipes, tubes 50 extending rearwardly from said pipes, and a transverse tube connecting the rearwardly-extending tubes for the inlet of air from the outside of the heater, said grate communicating with the flues of the shell to transmit heat from 55 the grate to the shell, substantially as set forth.

3. A hot-air fire-place heater composed of the following elements, to wit: a shell, A, formed with a series of transverse hot-air flues extending across its sides and bottoms, a hollow fire-grate communicating with said flues 60 to transmit heated air thereto, a grated bottom to the shell, a chute leading from said bottom, and a grated slide to said bottom to regulate the openings therein and control the 65 draft to the grate and the passage of ashes into the chute, as set forth.

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

WM. AUGUSTUS FRENCH.

Witnesses:

C. I. JOHNSTON,

J. P. McCrasky.