

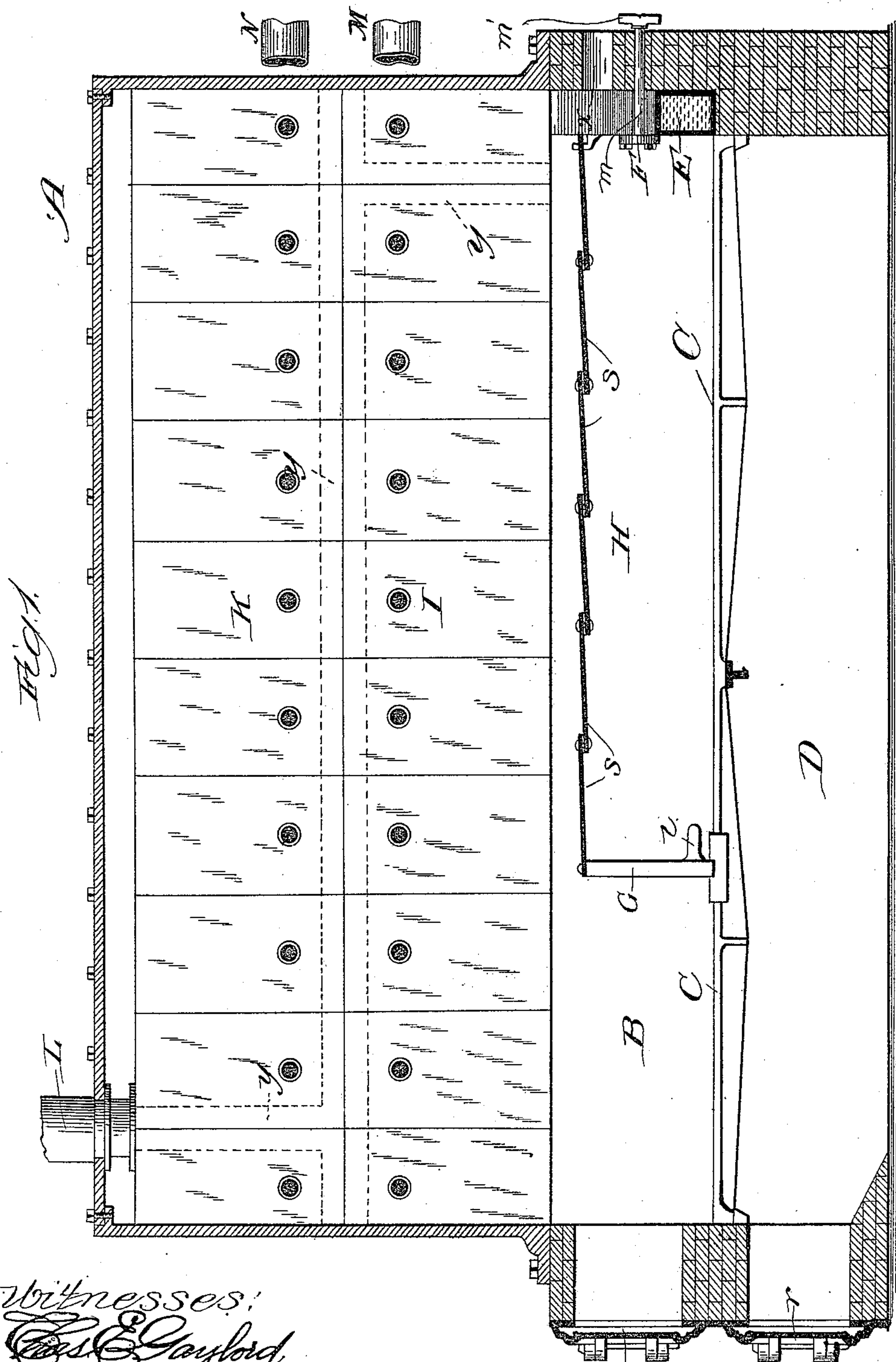
(No Model.)

3 Sheets—Sheet 1.

E. S. WILBER.  
HEATER.

No. 438,336.

Patented Oct. 14, 1890.



Witnesses:  
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J. H. Dyrenforth

Inventor:  
Elijah S. Wilber  
By Dyrenforth & Dyrenforth  
Attorneys

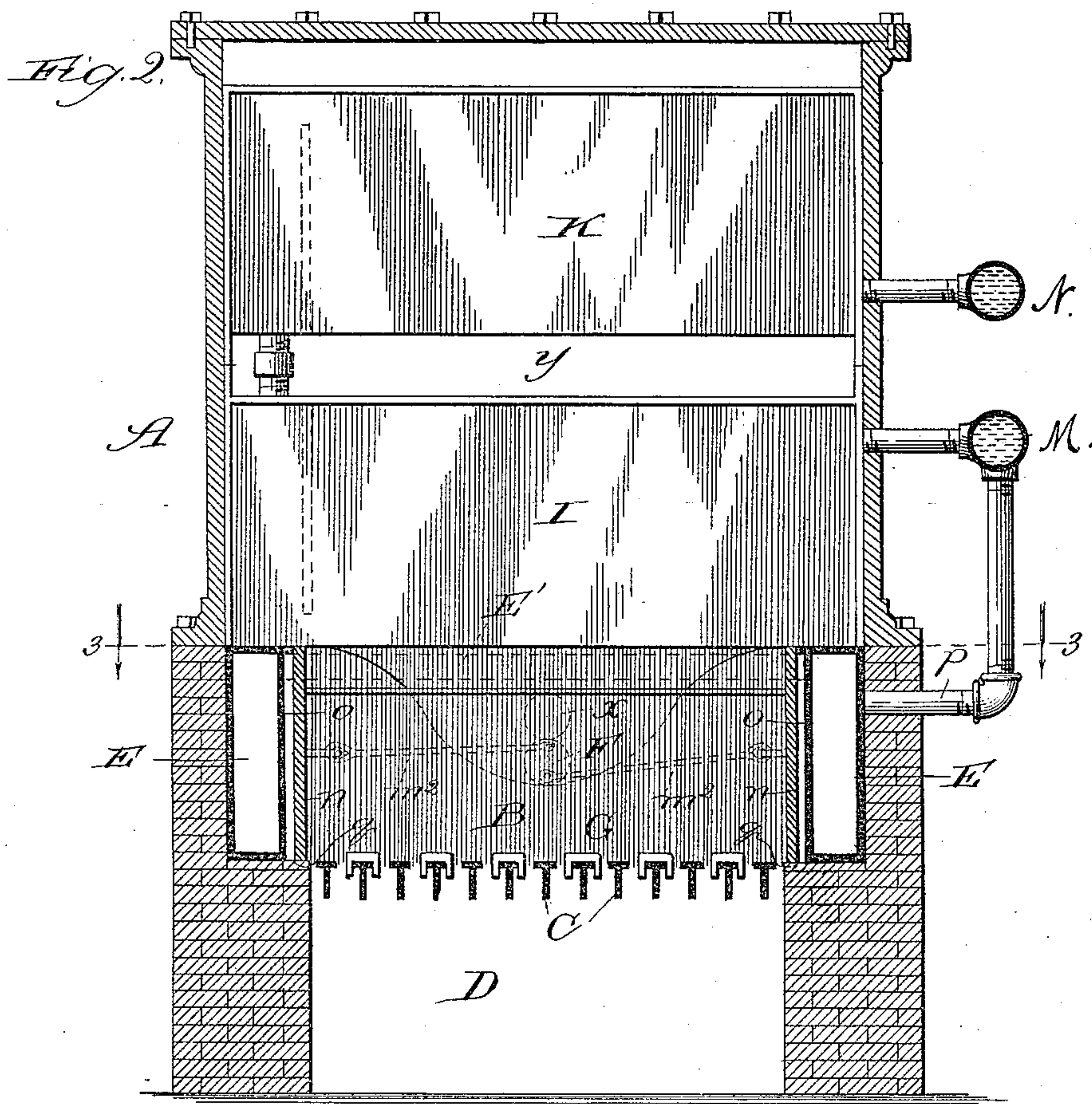
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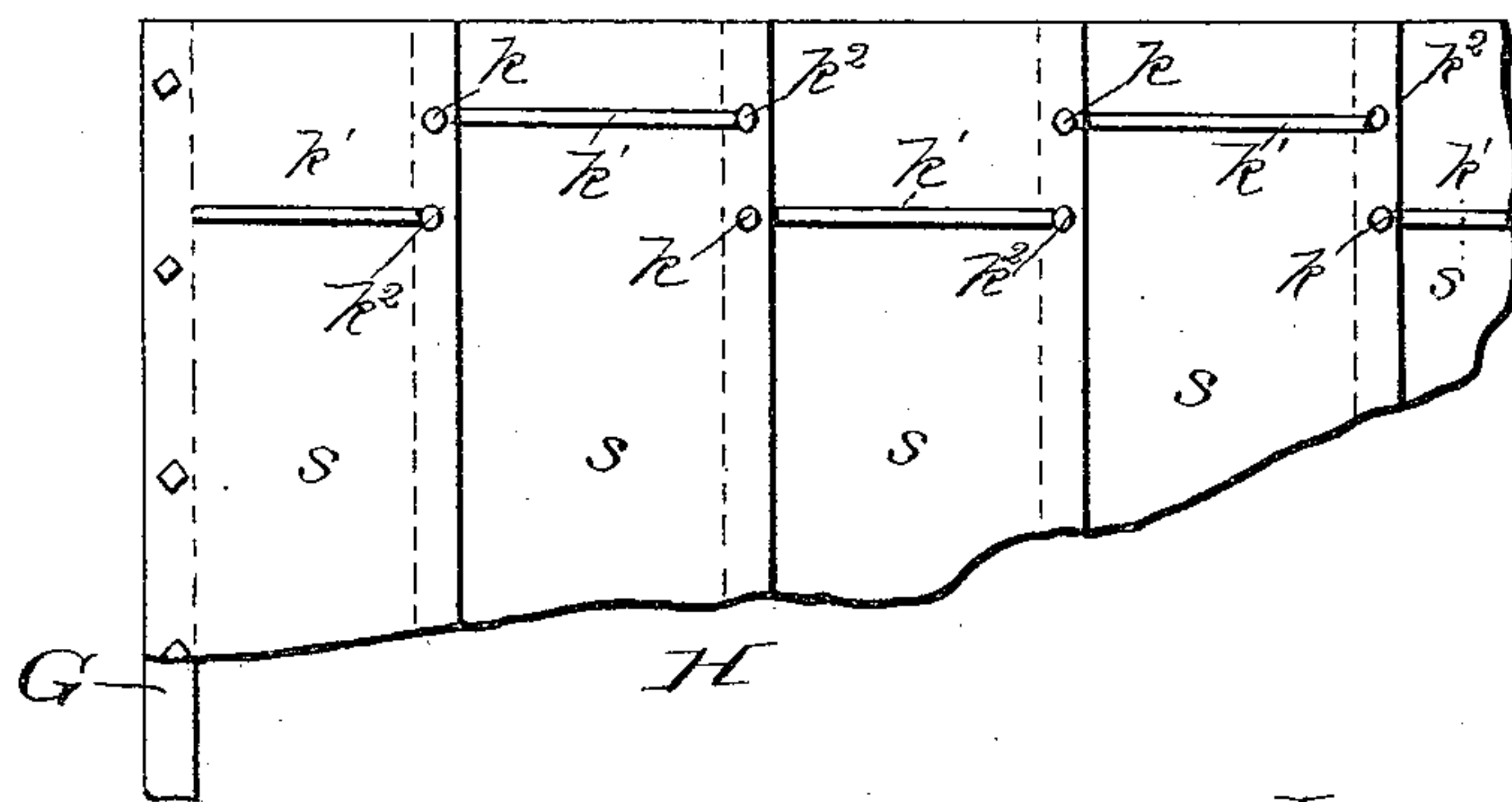
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*Fig. 4.*



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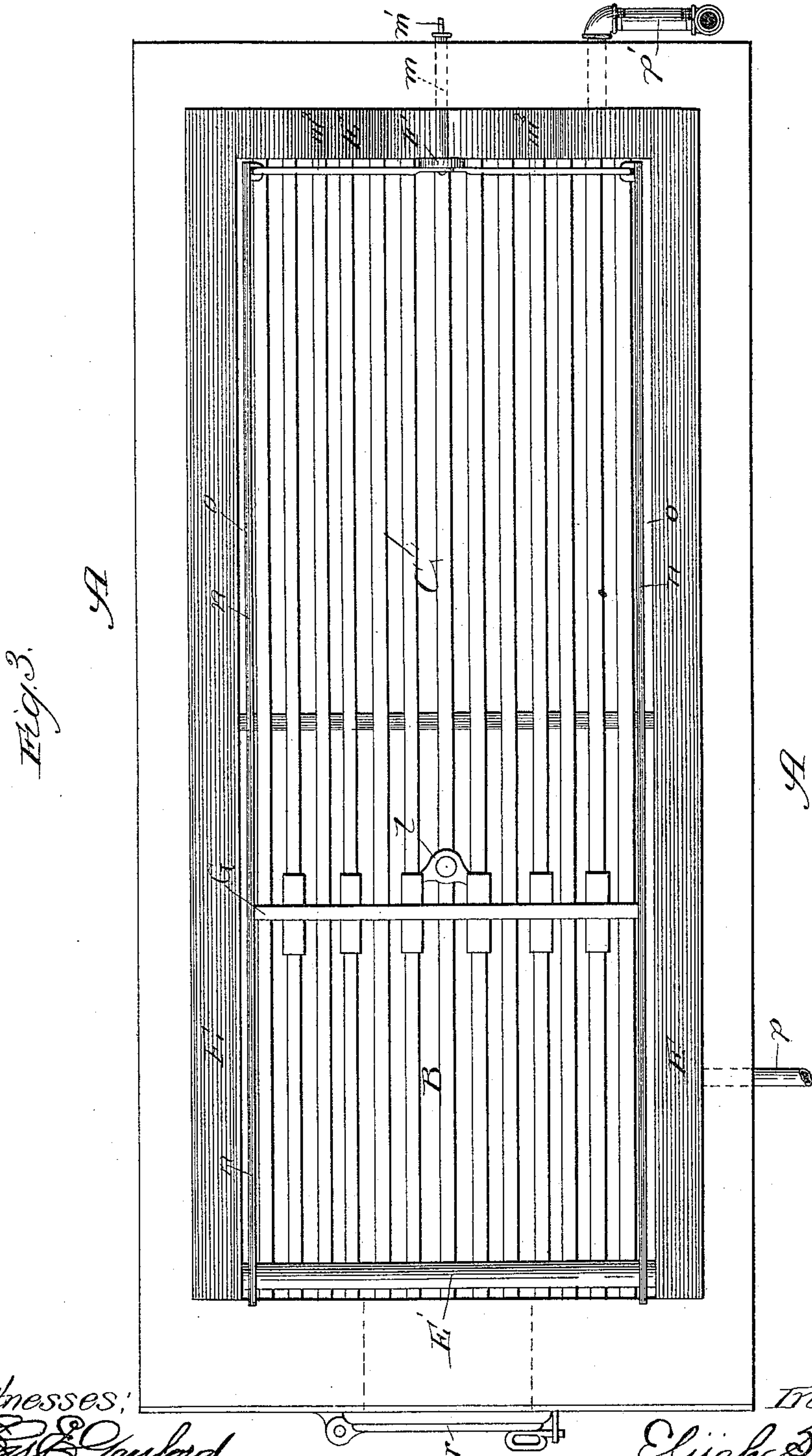
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3 Sheets—Sheet 3.

E. S. WILBER.  
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No. 438,336.

Patented Oct. 14, 1890.



Witnesses:

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# UNITED STATES PATENT OFFICE

ELIJAH S. WILBER, OF ENGLEWOOD, ILLINOIS.

## HEATER.

SPECIFICATION forming part of Letters Patent No. 438,336, dated October 14, 1890.

Original application filed November 26, 1888, Serial No. 291,853. Divided and this application filed May 21, 1889. Serial No. 311,614.  
(No model.)

*To all whom it may concern:*

Be it known that I, ELIJAH S. WILBER, a citizen of the United States, residing at Englewood, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Heaters, of which the following is a specification.

This invention relates to novel features in heaters, and which are described and illustrated in my Letters Patent of the United States No. 412,443, dated October 8, 1889, and of which the present is a divisional application.

The objects of my invention are to provide a construction of fire-chamber whereby the capacity of the latter may be readily augmented or decreased to adapt it to hold a quantity of fuel to suit the requirements of colder and warmer weather, and to provide other novel details to be used in connection with the adjustable fire-chamber, whatever the nature of the heater in which it may be provided, and still other details especially adapted for use in connection with the kind of heater set forth in my aforesaid former application, the novel features being designed to afford a generally improved construction of the heater in which they may be embodied.

In the accompanying drawings, Figure 1 shows the fire-chamber provided with my improvements in a heater, in which the lower part is shown in section and the upper part in elevation; Fig. 2, the same in sectional front elevation; Fig. 3, a horizontal section taken on the line 3 3 of Fig. 2 and viewed in the direction of the arrows, and Fig. 4 a broken plan view of the folding-apron detail.

While I illustrate the improvements constituting the subject of my present application in connection with a hot-water heater of the construction set forth in my aforesaid patent, I do not wish to be understood as limiting their application thereto, but intend them for use in any form of heater to which they are applicable.

A is a heater, shown as of general rectangular form and as containing intercommunicating receptacles I and K for water, Fig. 2, the former communicating from near its upper end with a manifold M, into which the heated

water discharges to be circulated therefrom, and the latter with a manifold N near its lower end, and into which the return-water empties to enter the receptacle K.

B is the fire-chamber, shown to be of the full dimensions of the interior of the shell of the heater and having for its base a grate C, which may be rigid, as shown, or adapted to be "shaken," and the grate separates the fire-chamber from the ash-pit D between the doors  $r$  and  $r'$ , leading, respectively, into the fire-chamber and ash-pit. At opposite sides and at the back of the fire-chamber and supported on ledges  $q$ , Fig. 2, in the walls are metal, preferably cast-iron, rectangular receptacles E E, intercommunicating through a pipe E' over the door  $r$ , and one of which is supplied through a feed-pipe  $p$ , which leads from the return-water manifold N and enters the receptacle E, near its base, through the furnace-wall, and the receptacle E communicates from near its top through a pipe  $p'$  with the outlet-manifold M. The receptacles E afford a water-back. On the side ledges  $q$ , in front of the receptacles E, are metal plates  $n$ , affording lining and forming air-spaces  $o$  between them and the water-back, and the plates are connected near their rear ends by links  $m^2$ , each to a disk F, Fig. 3, eccentrically thereof, the disk being supported on a rod  $m$ , extending through the rear wall of the furnace and having a handle  $m'$ , whereby when the rod is turned on its axis the simultaneous turning of the disk, owing to the manner of the connection therewith of the plates  $n$ , spreads the latter apart, for a purpose hereinafter explained.

On the grate C is a wall G, forming the back of the fire-chamber, across which it extends into contact at its ends with the lining and supported in vertical position on the grate. The back G is movable back and forth on the grate-bars, an eye  $l$  being provided at its rear side to be engaged by a hook on the end of a rod, (not shown,) which is passed for the purpose through an opening  $x$  in the rear wall of the furnace.

The wall or back G may be adjusted by moving it in the proper direction to augment or decrease the size of the fire-chamber to



adapt it to hold the quantity of fuel suitable for colder or warmer weather on releasing it from the holding effect at its lateral ends of the plates *n* by spreading the latter apart in the manner described. When the back has been moved to a desired position, the lining-plates may be brought against its lateral edges again to assist in sustaining it in upright position.

As it is desirable to prevent the spreading of the products of combustion from the fire-chamber into the space behind the back *G*, an apron *H* is extended over such space from the rear of the furnace to the upper edge of the back. Owing to the movable nature of the back *G*, however, the apron should be constructed to fold. Accordingly I form it in sections *s*, overlapping each other, as shown in Figs. 1 and 4, and having transverse slots *k'*, and connect the sections together by pins *k* and *k*<sup>2</sup>. In folding the apron the pins *k* move with the sections, near the edges of which they are rigidly secured in the slots *k'* of adjacent sections, into which slots they extend, and the slots *k'* in the other sections move on the pins *k*<sup>2</sup> of the respectively adjacent sections, thereby permitting ready folding of the apron. In unfolding or extending the sections of course the pins *k*<sup>2</sup> move in the slots and the respective slots move on the pins *k*. Thus movement of the back *G* to reduce the size of the fire-chamber extends the apron, and its movement to enlarge the fire-chamber folds the apron. The draft is thus caused to pass only through the fuel, and the products of combustion from the fire-chamber are prevented from gaining access behind the back

*G*, where a portion of their heat would be spent without advantage, and they pass over the apron toward the rear of the furnace whence they escape by way of the passage, as indicated by dotted lines *y* in Fig. 1, to the flue *L*.

What I claim as new, and desire to secure by Letters Patent, is—

1. In a heater, the combination of a fire-chamber *B*, having a grate *C*, an adjustable back *G*, a water-back *E E*, and lining-plates *n*, supported between the water-back and chamber *B* and affording air-spaces *o*, and confining the adjustable back between them, substantially as described.

2. In a heater, the combination of a fire-chamber *B*, having a grate *C*, an adjustable back *G*, an extensible apron *H*, a water-back *E E*, and lining-plates *n*, supported between the water-back and chamber *B* and affording air-spaces *o*, and confining the adjustable back between them, substantially as described.

3. In a heater, the combination of a fire-chamber *B*, having a grate *C*, an adjustable back *G*, an extensible apron *H*, a water-back *E E*, movable lining-plates *n*, supported between the water-back and chamber *B* and affording air-spaces *o*, a disk *F* on a rotary rod *m*, extending through the shell of the heater, and links *m*<sup>2</sup>, connecting the opposite lining-plates with the disk eccentrically thereof, substantially as described.

ELIJAH S. WILBER.

In presence of—

J. W. DYRENFORTH,  
M. J. BOWERS.