

(No Model.)

3 Sheets—Sheet 1.

F. D. WOODRUFF.
FIRE PLACE HEATER.

No. 448,103.

Patented Mar. 10, 1891.

Fig. 1

Fig. 2.

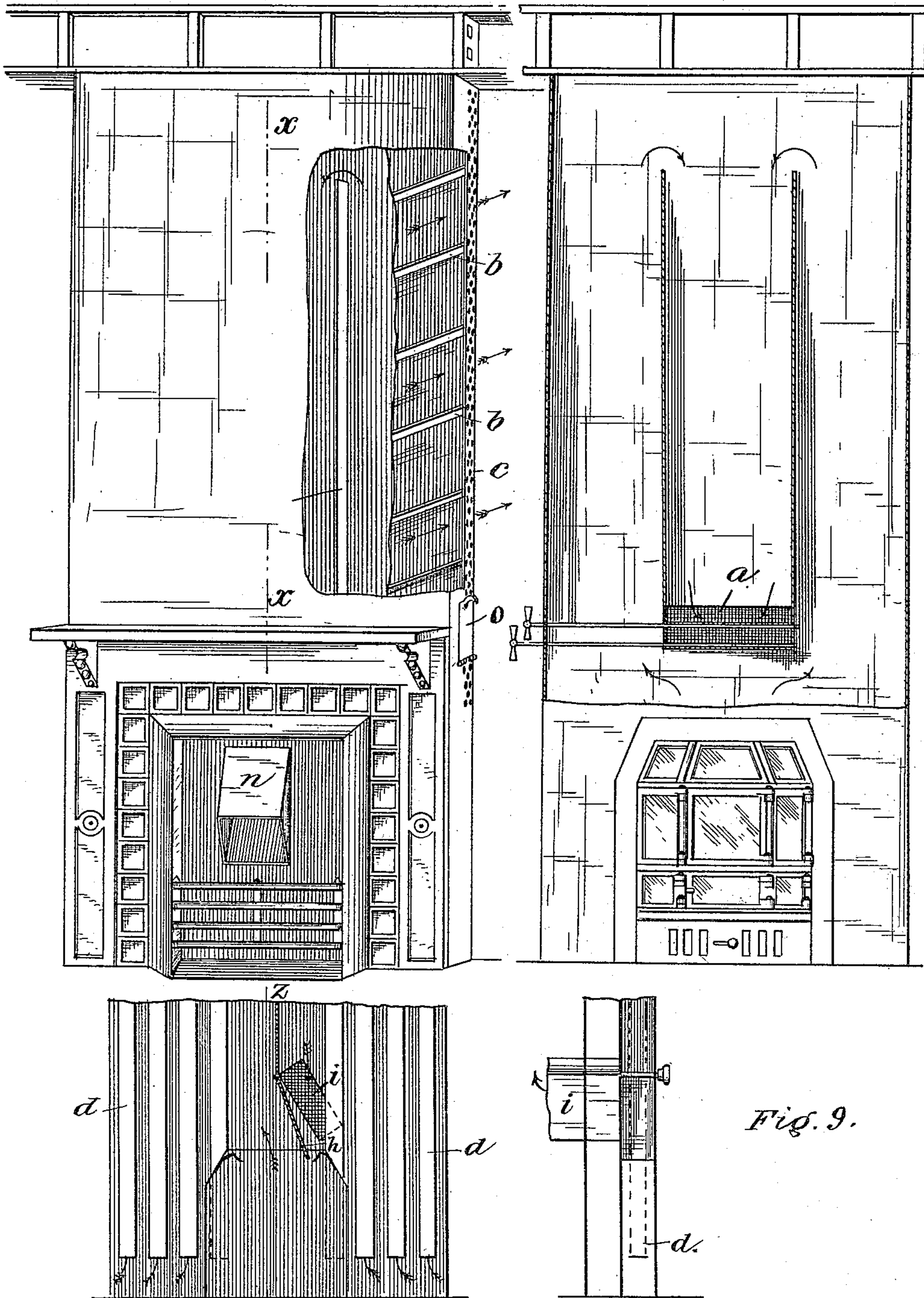


Fig. 9.

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Fig. 8.

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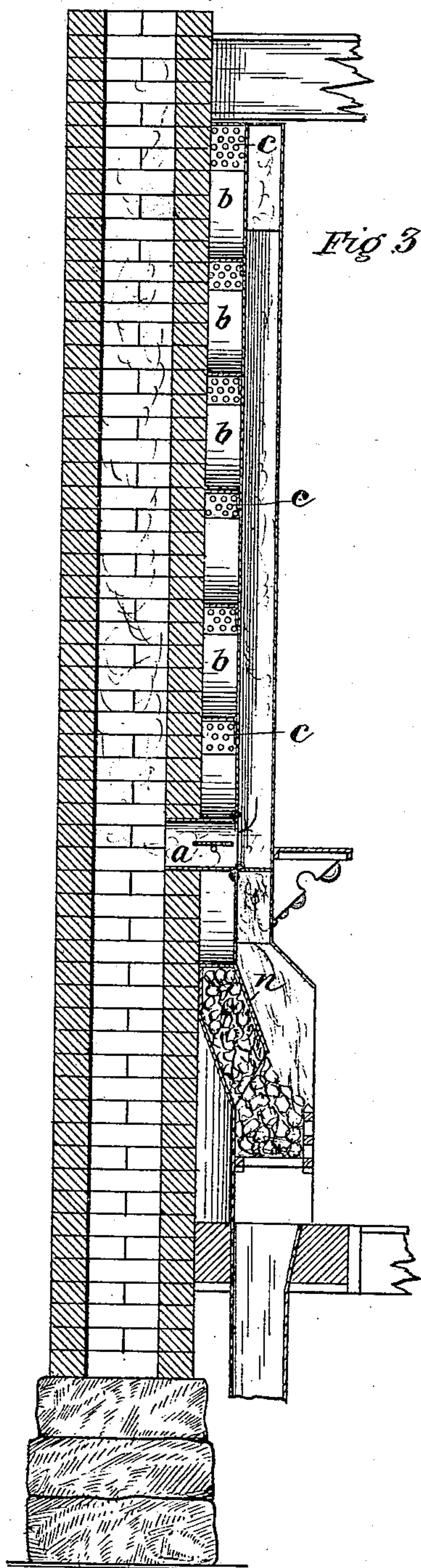


Fig. 3

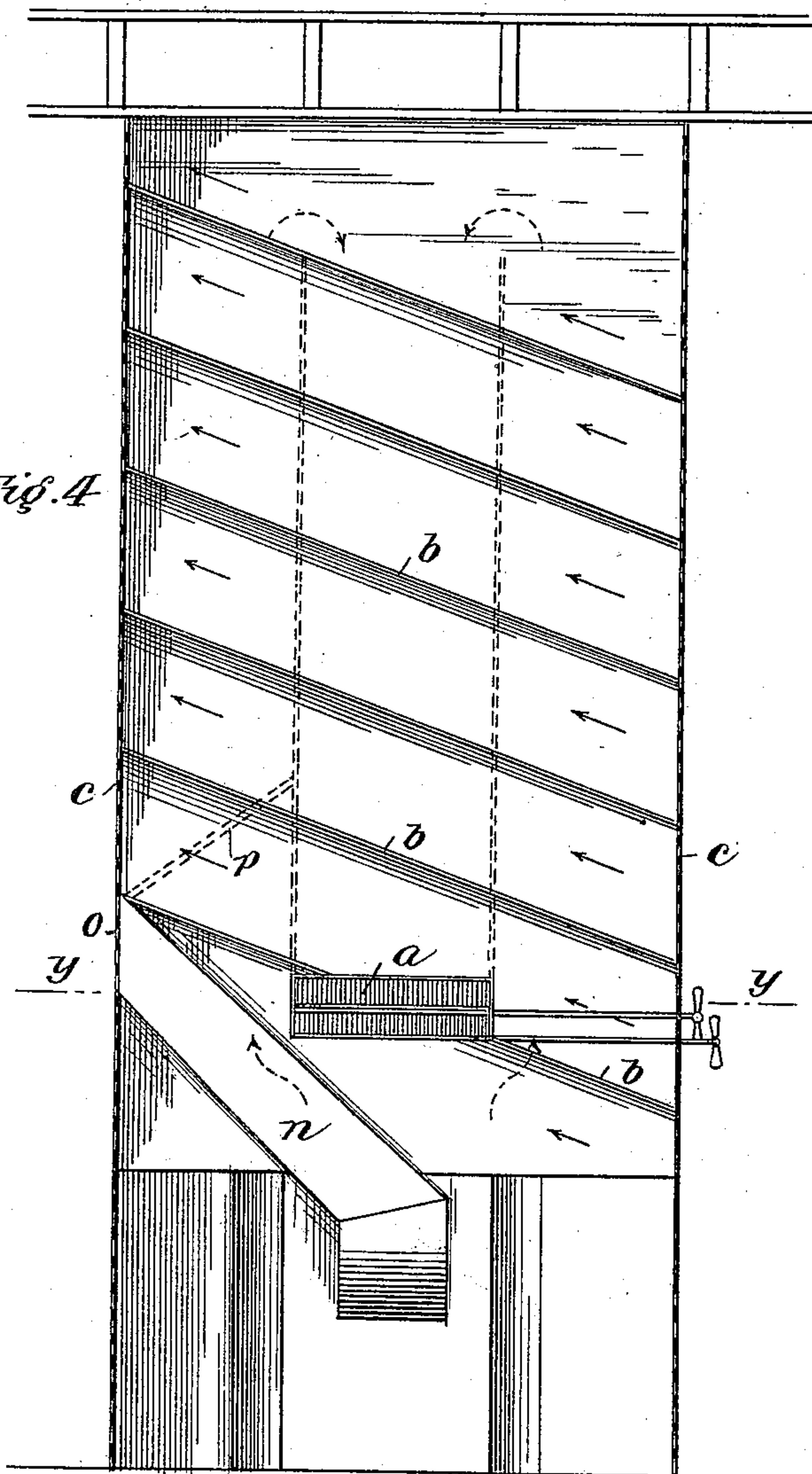


Fig. 4

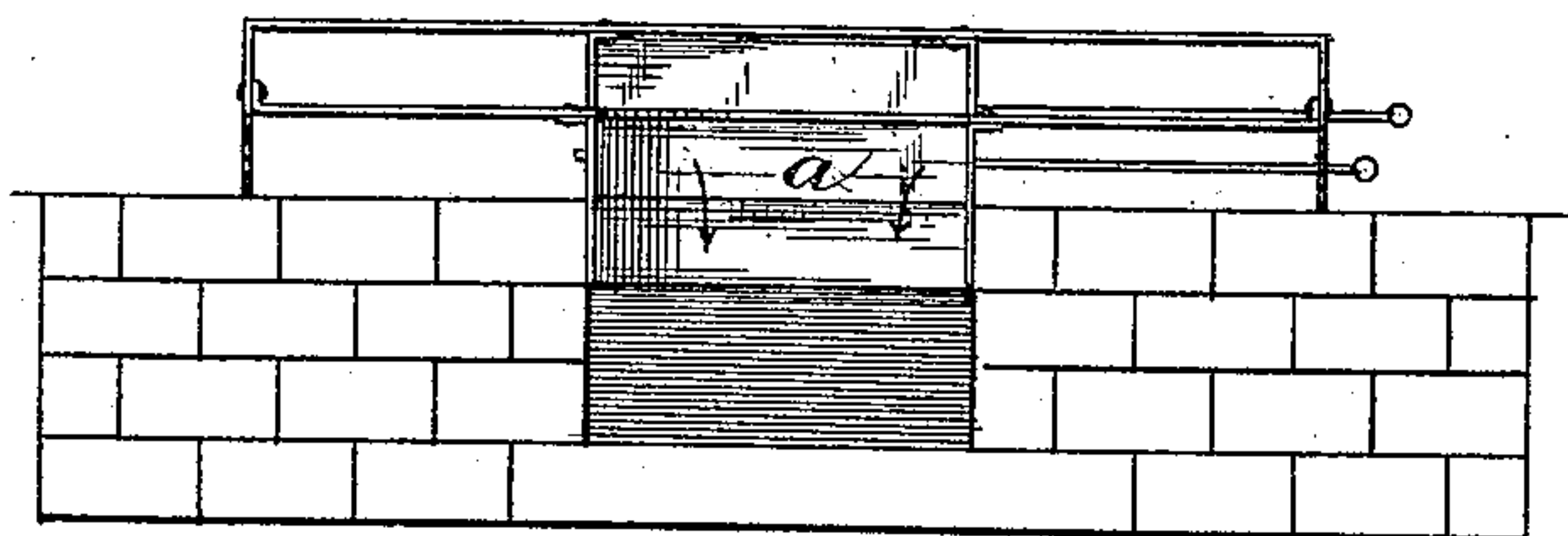


Fig. 5.

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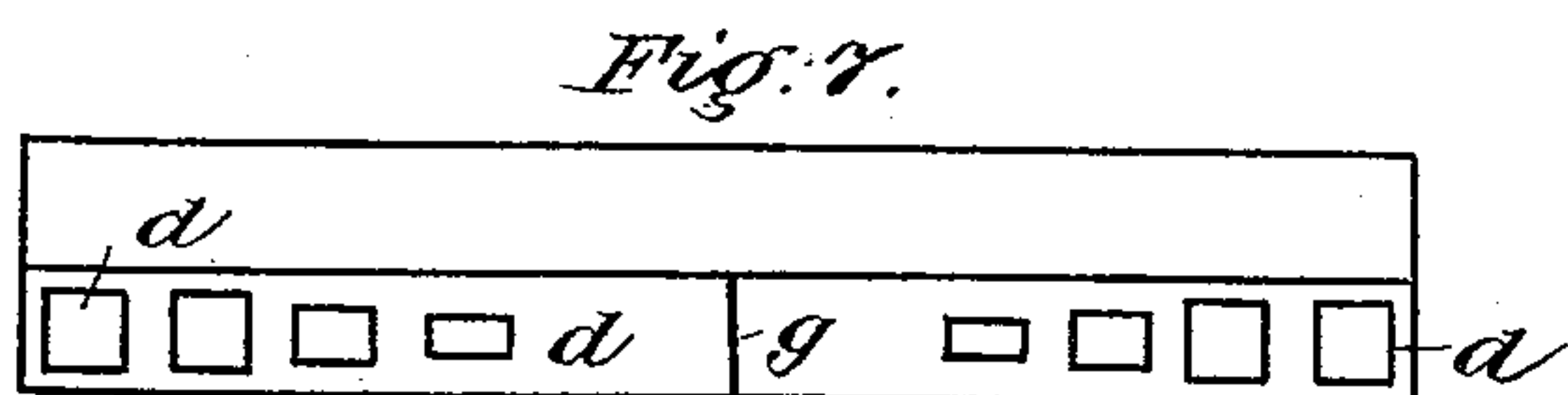
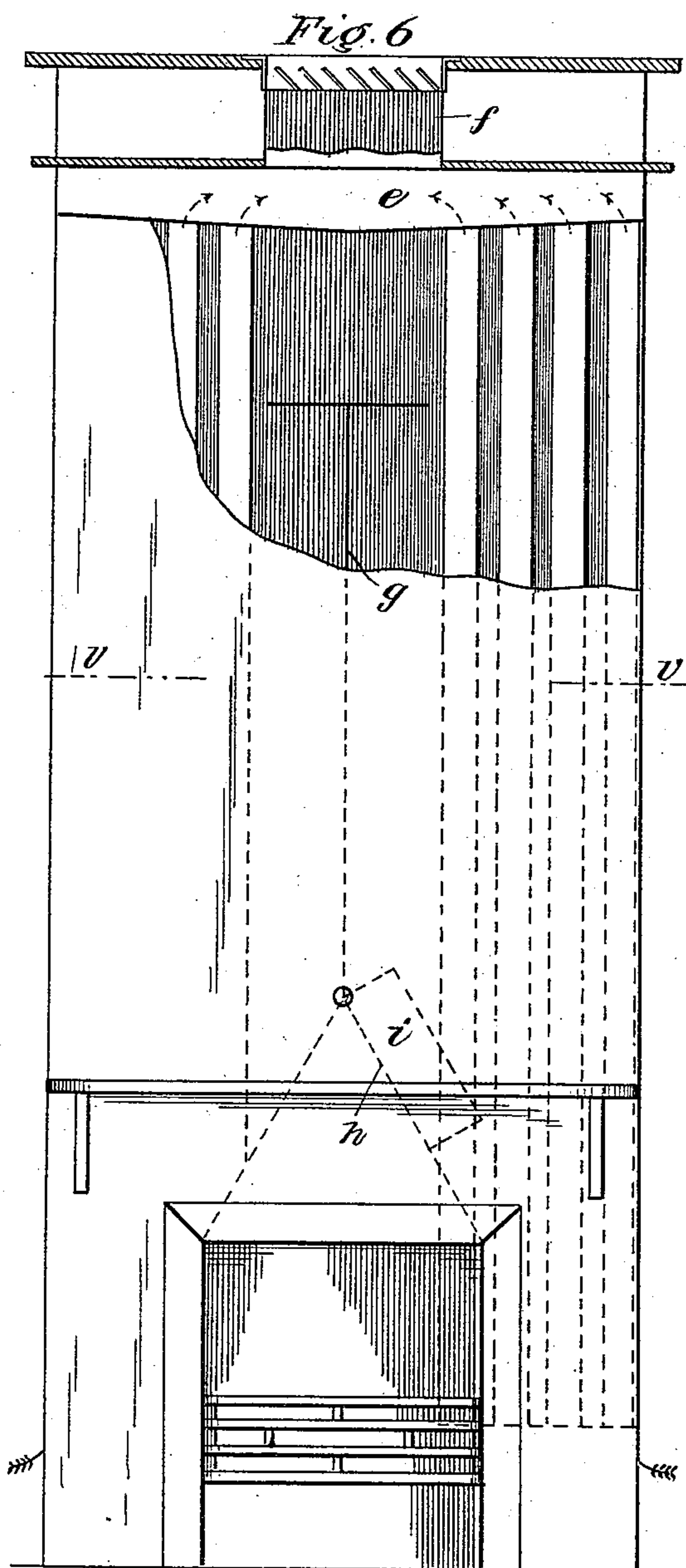
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UNITED STATES PATENT OFFICE.

FREDERICK D. WOODRUFF, OF MAYWOOD, ILLINOIS.

FIRE-PLACE HEATER.

SPECIFICATION forming part of Letters Patent No. 448,103, dated March 10, 1891.

Application filed May 31, 1887. Serial No. 239,774. (No model.)

To all whom it may concern:

Be it known that I, FREDERICK D. WOODRUFF, a citizen of the United States, residing at Maywood, in the county of Cook and State of Illinois, have invented a certain new and useful Improvement in Fire-Place Heaters, of which the following is a full, clear, concise, and exact description, reference being had to the accompanying drawings, forming a part of this specification.

My invention relates to magazine-stoves for heating purposes; and it consists in a stove having a large radiating-surface in connection with suitable flues and dampers so arranged that the heat generated may be utilized to the fullest extent. The stove is preferably placed near the walls of the room, so as to have the appearance of a fire-place grate.

My heater is preferably constructed so as to take the place of the chimney-breast, and will be found especially adapted to be used in rooms having simply chimney-flues, and when thus arranged complete with the mantel takes the place of the ordinary chimney-breast and open grate. A combustion-chamber is placed above the fire-pot, having the side extending backwardly, and vertical partitions are placed in the combustion-chamber, forming divisions therein. Ribs upon the back of the combustion-chamber extend diagonally from one of the perforated extended sides upward to the other of the perforated extended sides of the combustion-chamber. Thus sufficient heat may be obtained to warm the room or building in the very coldest weather. The doors are so arranged that they may be opened wide enough to make the fire-place act as an open grate, when desired, or the doors may be made removable, like a blower.

I have found that cannel-coal or wood may be successfully used in my heater without a blower or other device for closing the grate. In case hard coal or coke is used I have found it necessary to provide means for closing the upper part of the grate in order to increase the draft sufficiently to heat the radiating-surfaces.

My invention is illustrated in the accompanying drawings, in which—

Figure 1 is a perspective view, partly in section, showing my heater complete in con-

nection with a mantel, the blower and damper being removed. Fig. 2 is a front elevation showing the flues and flue-dampers in detail with doors provided for the purpose of closing the grate after the manner of a blower, the form of the opening being accordingly modified. Fig. 3 is a central transverse vertical sectional view upon line *xx* of Fig. 1. Fig. 4 is a rear view showing the radiating-surface, the straight arrows indicating the direction of the air as it circulates between the heater and the wall. Fig. 5 is a horizontal view upon line *yy* of Fig. 4, showing the connection between the flues of the heater and the chimney. Fig. 6 is a front view of my heater, in which I have shown hot-air pipes introduced into the smoke-chamber and connecting above with a hot-air chamber which is connected by register with the room above. Fig. 7 is a sectional view thereof on line *vv* of Fig. 6. Fig. 8 shows the hot-air flues shown also in Fig. 6 and the swinging damper by means of which the smoke is sent around about the hot-air pipes or directly into the chimney-flue, as desired. Fig. 9 is a view of the damper as seen from line *zz* of Fig. 8.

Like parts are indicated by similar letters of reference throughout the different figures.

As shown in Figs. 2 and 3, when the damper *a* is closed, the draft will be, as indicated by the arrows, up the side flues and down the central flue and thence into the chimney. These flues are arranged so as to occupy the place of the chimney-breast. As shown more clearly in Figs. 1, 3, and 4, these flues, which form the heating or combustion chamber, are separated from the brick-work of the chimney. This space between the combustion-chamber and the chimney I preferably divide up into several distinct portions by partitions or ribs *b*. These partitions are preferably placed at an angle of about thirty degrees from the horizontal, the opposite sides *c* being open-work or perforated, as shown. Thus it will be seen that the combustion-chamber in my heater has the appearance, as it were, of a chimney-breast, through which combustion-chamber the smoke and products of combustion are made to circulate at will by means of the vertical partitions and damper placed therein, and this combustion-chamber, thus

becoming heated, acts as a radiator both in front and in rear and serves to keep the air of the room heated and in circulation.

As shown in Figs. 8 and 9, I provide hot-air pipes *d d* in the combustion-chamber when a room adjacent to or over the room in which the heater is placed is to be warmed thereby. These pipes are connected below with a cold-air duct or with the air of the room and above with a hot-air chamber *e*. From this chamber *e* hot-air flues are led in any direction desired. I have shown opening *f* provided with a register for heating the room above.

As shown in Figs. 6 and 7, the combustion-chamber is divided by a partition *g*. The smoke, when the direct-draft damper *h* is closed, will be caused to circulate up around the said partition *g* into the flue *i*. The pipes *d* may be round or square or of any shape desired. I preferably, however, make the pipes next to the partition *g* smaller than the outer pipes, as shown in Fig. 7, so that there may be plenty of space remaining in the combustion-chamber for the smoke to circulate. By opening the damper *h* the draft is made direct to the chimney-flue without circulating around the partition or division *g*.

By reference to Figs. 1, 3, and 4 it will be seen that I provide a chute *n*, which extends from the door *o* at the side down to the fire-place. A vent *p* from this chute connects with the chimney-flue, so that there may be no escape of gas into the room. This chute is thus made a reservoir for the hard coal, which is fed by gravity as needed.

The combustion-chamber is made shallow from front to rear—say three to five inches—and of considerable width, say from three to five feet. Thus the smoke and other products of combustion are made to come in close contact with the walls of the combustion-chamber and give up their heat, which is utilized to heat the room, as described.

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

1. In a heater for warming purposes, the

combination of a fire-pot, a combustion-chamber above the fire-pot, having the side extending beyond the back thereof and below such combustion-chamber, such extension having perforations therein, a flue in the combustion-chamber, extending from the lower part thereof into a chimney, vertical partitions in the combustion-chamber, extending from below the flue therein and upon each side thereof to near the top of the combustion-chamber, forming divisions therein, a damper adapted to close the lower end of the division of the combustion-chamber within which the flue to the chimney is located and below such flue, and ribs upon the back of the combustion-chamber, extending diagonally from one of the perforated extended sides upward to the other of the perforated extended sides of the combustion-chamber, substantially as described.

2. In a heater for warming purposes, the combination of a fire-pot, a combustion-chamber above the fire-pot, the sides to such combustion-chamber extending beyond the back thereof and below the lower end, perforations in such extended sides, a flue in the combustion-chamber, extending to a chimney, and ribs upon the back of the combustion-chamber, extending diagonally from one of the perforated extended sides upward to the other extended perforated side of the combustion-chamber, whereby, when the heater is placed with such perforated extended sides in close contact with the chimney or wall, air passing through the perforated extension of one side of the combustion-chamber and heated by coming in contact with the back of the combustion-chamber may be directed to pass in such heated condition through the other perforated extension of the side of the combustion-chamber, all substantially as described.

In witness whereof I hereunto subscribe my name this 27th day of May, A. D. 1887.

FREDERICK D. WOODRUFF.

Witnesses:

GEORGE P. BARTON,
WM. M. GILLER.