

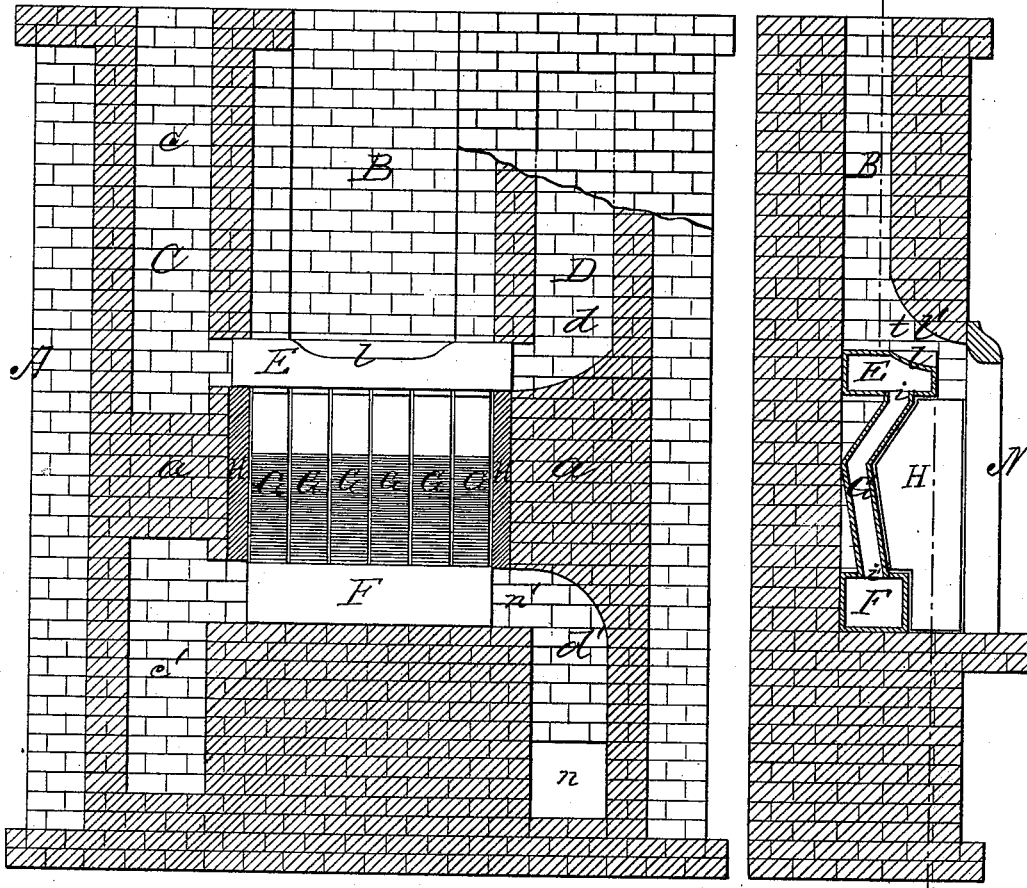
L. JOHNSTON.  
Fire-Place Air-Heater.

No. 207,526.

Patented Aug. 27, 1878

*Fig. 1.*

*Fig 2*



WITNESSES

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# UNITED STATES PATENT OFFICE.

LYSANDER JOHNSTON, OF DANVILLE, ILLINOIS.

## IMPROVEMENT IN FIRE-PLACE AIR-HEATERS.

Specification forming part of Letters Patent No. 207,526, dated August 27, 1878; application filed March 2, 1878.

*To all whom it may concern:*

Be it known that I, LYSANDER JOHNSTON, of Danville, in the county of Vermillion and State of Illinois, have invented a new and valuable Improvement in Fire-Place Air-Heaters; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings, making a part of this specification, and to the letters and figures of reference marked thereon.

Figure 1 of the drawings is a representation of a longitudinal section of my fire-place air-heater. Fig. 2 is a vertical transverse section thereof.

This invention has relation to improvements in fire-place air-heaters.

The object of the invention is to utilize the backs and sides of fire-places to heat air, which being warmed is delivered by conduits to the desired point.

The nature of the invention consists in the combination, with the three vertical chimney or draft flues, of two parallel horizontal flues, connecting the two side flues above and below horizontal partitions in the side flues, and angular vertical flues connecting said parallel horizontal flues and forming a fire-back, as hereinafter shown and described.

In the accompanying drawings, the letter A designates a wall of a house, having a flue, B, for the passage of smoke, and two lateral flues, C and D, for a purpose hereinafter set forth. The flues C and D are divided by a transverse partition, *a*, into an upper and lower branch, lettered, respectively, *c c'* and *d d'*. The lower branch, *d'*, of the flue D has an aperture in its rear wall leading to the exterior air, and the upper branch an opening in its front wall, closed at pleasure by a suitable register. E represents a cast-metal box, of the general form of a rectangle, that is built into the wall across the smoke-flue B, and opens at each end into the flues C D, thereby establishing a communication between them above the partitions *a*, and F is a similar box connecting the said flues below the said partitions *a*. The opposite horizontal faces of these boxes are slotted, as shown at

*i* and *i'*, and in these slots are seated the ends of the independent angular metallic tubes G, arranged side by side, and constituting the fire-place back. These tubes are rectangular in cross-section, preferably, and present a smooth outer surface. The cheeks H of the fire-place are made of fire-brick, and set in snugly against the end tubes of the back and the lower box-tube F. The grate is hung in the arch of the fire-place in the usual manner, and the products of combustion pass into the flue B through a reduced throat, *t*, formed by a depression, *l*, on the upper face of the box-tube and a backward and upward flare, *l'*, of the arch of the fire-place.

By removing the metallic arch plate N, the cheeks of the fire-place may be removed and the lower horizontal tube, F, exposed. It may be then removed, and such of the sections of the back as may have been burned out readily removed.

Cold air is admitted into the flue D through the opening *n*. It then passes into the lower horizontal flue-pipe, F, through an opening, *n'*, in the side wall of the vertical flue D, and passes upward through the pipes G of the back into the upper horizontal flue, E. It passes in a highly-heated state out of the ends of this flue into the lateral flues C D, which deliver it at the apartment to be warmed.

The flue C extends upward beyond the ceiling, and opens usually into the room or rooms above, the air-supply being regulated by a suitable register.

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

The combination, with the vertical flues C B D, of the parallel horizontal flues E F, extending across the flue B, and connecting the flues C D above and below the partitions *a*, and the angular flues G, connecting the flues E and F, and forming the fire-back, substantially as specified.

In testimony that I claim the above I have hereunto subscribed my name in the presence of two witnesses.

LYSANDER JOHNSTON.

Witnesses:

JOHN P. NORVELL,  
SEP. H. STEWART.