

(No Model.)

2 Sheets—Sheet 1.

W. J. JACKSON.  
HEATER.

No. 492,207.

Patented Feb. 21, 1893.

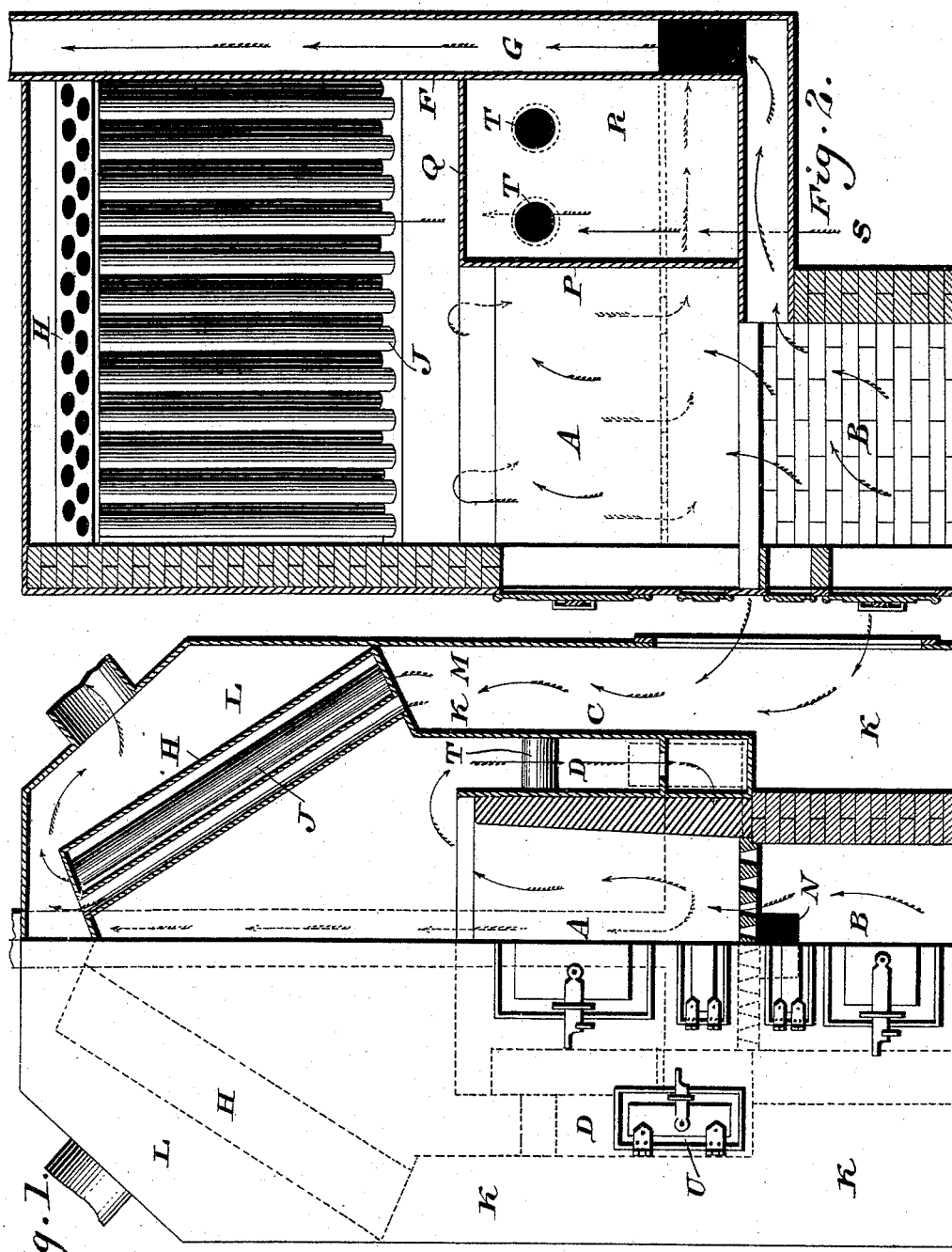


Fig. 1.

WITNESSES:

P. J. Tagles.

L. Douville

M

INVENTOR

William J. Jackson.

BY

John A. Diederichsen,  
ATTORNEY.

(No Model.)

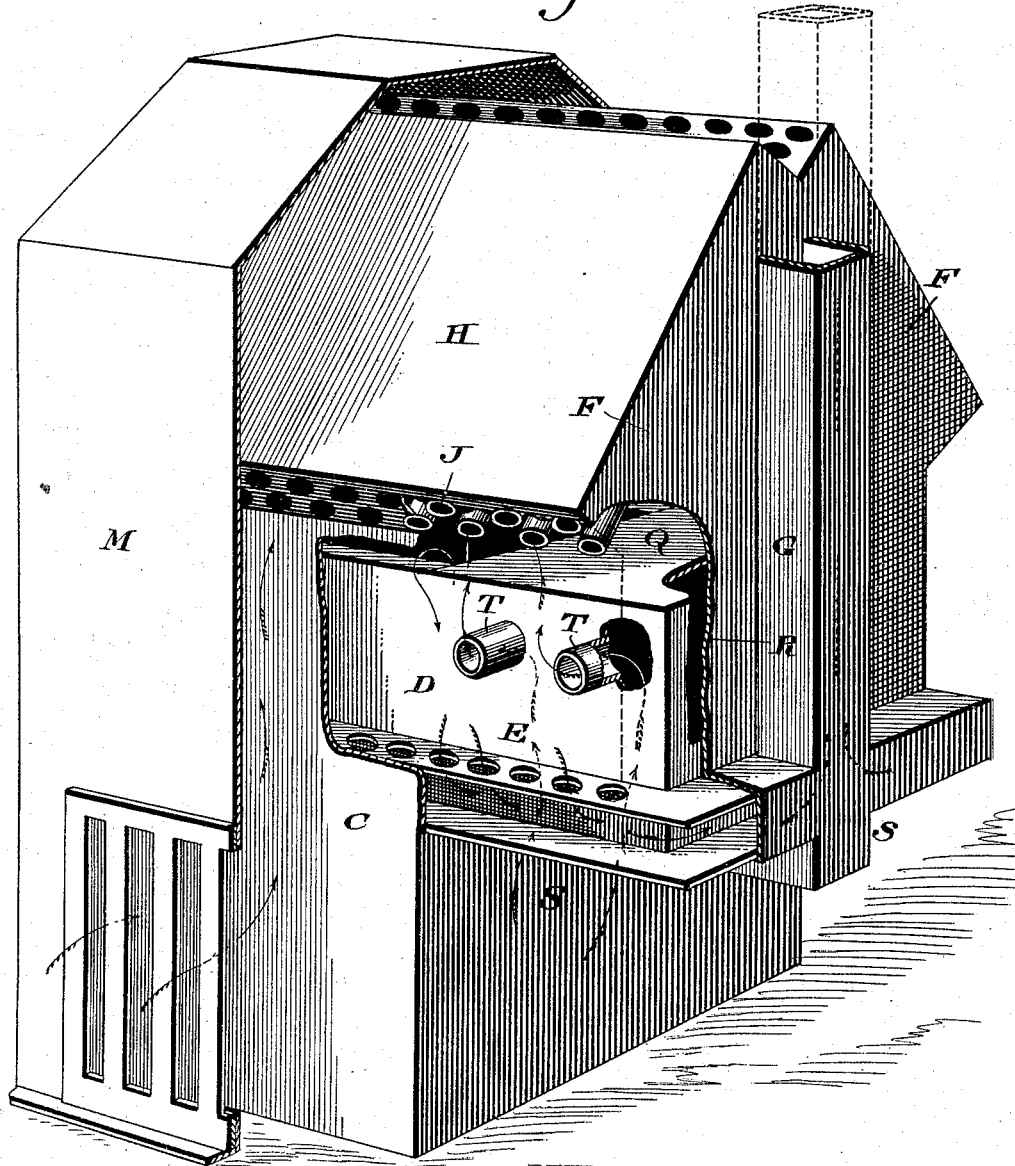
2 Sheets—Sheet 2.

W. J. JACKSON.  
HEATER.

No. 492,207.

Patented Feb. 21, 1893.

*Fig. 3.*



WITNESSES:

*P. J. Chagles.*

*L. Douville*

INVENTOR

*William J. Jackson.*

BY

*John A. Diederichsen,*  
ATTORNEY.

# UNITED STATES PATENT OFFICE.

WILLIAM J. JACKSON, OF PHILADELPHIA, PENNSYLVANIA.

## HEATER.

SPECIFICATION forming part of Letters Patent No. 492,207, dated February 21, 1893.

Application filed March 29, 1892. Serial No. 426,878. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM J. JACKSON, a citizen of the United States, residing in the city and county of Philadelphia, State of Pennsylvania, have invented a new and useful Improvement in Heaters, which improvement is fully set forth in the following specification and accompanying drawings.

My invention consists of a heater having converging air-heating flues over the combustion chamber, and means substantially as described for heating the sides and rear of the heater, so as to provide additional means for heating the cold and also fresh air, as will be hereinafter set forth.

Figure 1 represents a partial front view and partial transverse vertical section of a heater embodying my invention. Fig. 2 represents a longitudinal vertical section thereof. Fig. 3 represents a perspective view taken from the rear and partly broken away.

Similar letters of reference indicate corresponding parts in the several figures.

Referring to the drawings:—A designates the combustion chamber or fire-pot of a furnace, and B the ash-pit thereof.

Rising from the exterior of the sides of the chamber A, is a casing C, between the walls of which and the walls of said chamber are spaces forming the depending flues D, within which are horizontally-arranged perforated plates E, the upper portions of said flues above said plates being closed at the rear by the back plate F of the body of the furnace. The portions of the flues below said plates E, communicate at the rear with the exit flues G, G.

Supported on the casing C is the roof or crown H of the combustion chamber, the same being converging and having secured thereto the flues J, which are also converging, and open at both ends, so that air from the cold air chamber K is adapted to pass through said flues and enter the hot air chamber L, which chambers are suitably formed by the exterior casing M, and outer portions of the furnace. It will be seen that the products of combustion highly heat the flues J, and then descend into the flues D, thus heating the casing C, whereby the cold air entering the chamber K, is heated by contact therewith, by which provisions the chamber L is supplied with air of an exceedingly high tem-

perature. The products of combustion pass through the flues D, and are discharged into the exit flue G. The dust flue N leads from the ash-pit into the flue G, and is provided with a suitable valve for evident purposes. The rear of the combustion chamber is closed by vertical and horizontal walls P, Q, forming the air chamber R, which opens at bottom into the space S, see Figs. 2 and 3, and thus receives air which is heated by contact with said walls P and Q.

Connected with the casing C and the inner walls of the flues D, which walls constitute the sides of the air chamber R, are air flues T, which form communications between said chamber R and the cold air chamber K. Now as the air is heated in said chamber R, it is directed by the flues T into the chamber K, and from thence into and through the top flues J, and thus an increased volume of hot air is supplied to the chamber L.

The furnace is provided with the necessary doors, those U of the flues D permitting the latter to be easily cleansed, as most plainly shown in Fig. 1, as said flues are accessible at the front of the furnace.

The plates or diaphragms E serve to break the direct current of the draft in the flues D, and prevent concentration of the same at the rear end thereof, whereby the walls of said flues are uniformly heated.

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

1. A furnace having a combustion chamber, a casing rising from the exterior of the sides of said chamber forming depending flues, perforated horizontal plates in said flues, and an exit flue in communication with said depending flues below said plates, said parts being combined substantially as described.

2. A furnace having a combustion chamber, a casing rising from the exterior of the sides of said chamber, forming depending flues, a converging roof for said chamber supported on said casing, converging flues secured on said roof and exterior casing, forming chambers above and below said roof, said parts being combined substantially as described.

3. A furnace having a combustion cham-

ber with a rear air chamber, a casing rising from the exterior side of said combustion chamber forming depending flues communicating with said combustion chamber, an exterior casing forming chambers outside of said flues, and tubes connected with the inner walls of the flues and the first mentioned casing, and communicating with the said air and exterior chambers, said parts being combined substantially as described.

WILLIAM J. JACKSON.

Witnesses:

JOHN A. WIEDERSHEIM,  
L. JENNINGS.