

J. J. BROWN.
Heating-Apparatus.

No. 218,226.

Patented Aug. 5, 1879.

Fig. 1.

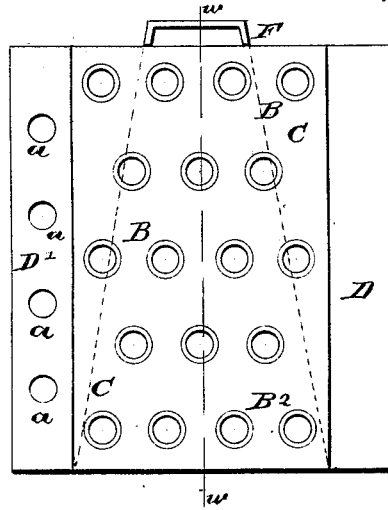


Fig. 2.

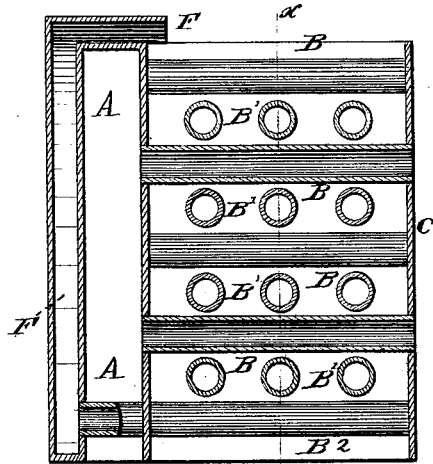
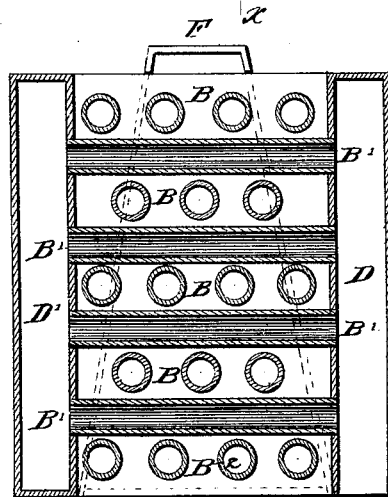


Fig. 3.



Witnesses:

P. L. Dietrich
J. Stockman.

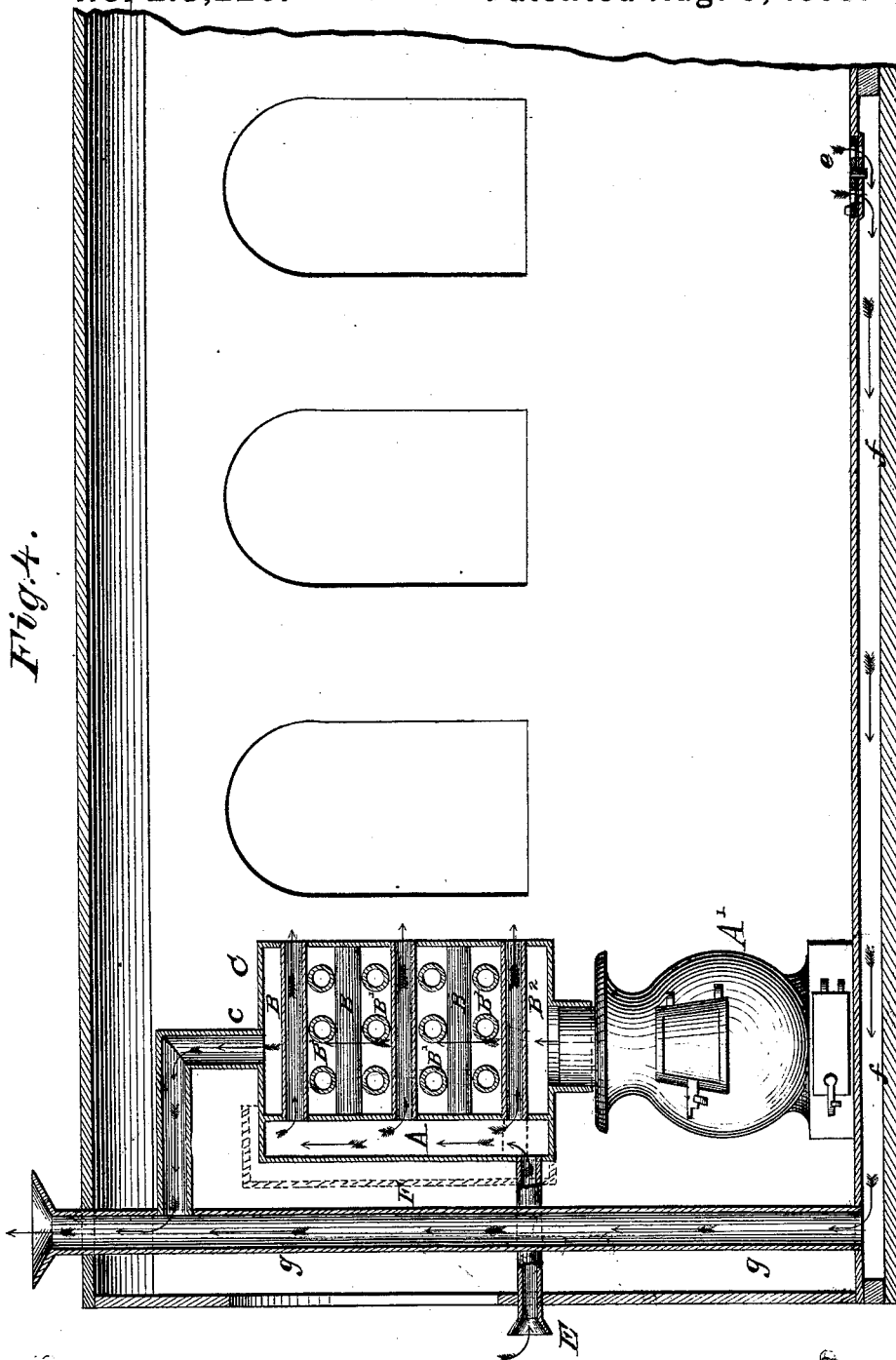
Inventor

James J. Brown.
Per *C. H. Watson & Co.* Attorneys.

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UNITED STATES PATENT OFFICE

JAMES J. BROWN, OF MADISON, WISCONSIN.

IMPROVEMENT IN HEATING APPARATUS.

Specification forming part of Letters Patent No. **218,226**, dated August 5, 1879; application filed June 4, 1879.

To all whom it may concern:

Be it known that I, JAMES J. BROWN, of Madison, in the county of Dane and State of Wisconsin, have invented certain new and useful Improvements in Heating Apparatus; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

This invention relates to heating apparatus; and it consists in the construction and arrangement of a device for utilizing the ordinarily-wasted heat from a stove or furnace, and to heat cold air and allow the same to pass out into the room or rooms to be heated, and to ventilate the same, as will be hereinafter more fully set forth.

In the annexed drawings, which fully illustrate my invention, Figure 1 is a front elevation of my improved heating device. Fig. 2 is a vertical section on the lines *ww*, Fig. 1. Fig. 3 is a vertical section on the line *xx*, Fig. 2; and Fig. 4 shows the device applied to a railway-car.

My improved heating apparatus may be made separate from the chimney, and used in connection with the chimney or separate from it; or it may, especially in new houses, be built with the chimney—that is to say, the chimney itself may be built to form the various chambers, as hereinafter described.

A represents a rear cold-air chamber, having its lower end communicating by a suitable inlet with the outside air, so as to admit cold air into said chamber.

From the chamber A one, two, or more series of pipes or flues, B, convey the air forward through the front of the chimney, or through a front plate, C, arranged as shown, for holding said flues in place. This plate C also connects two side chambers, D and D'. The chamber D is a cold-air chamber, having its lower end communicating with the outside air by a suitable inlet, so as to admit cold air into the same. This air then passes through one, two, or more series of pipes or flues, B', from said chamber D into the chamber D', which has

openings *a* at the front. The flues or pipes B and B' thus cross each other at right angles, and as the products of combustion pass up through the space formed by the chambers A D D' and plate C, said pipes or flues are entirely enveloped, and the air becomes rapidly heated and escapes into the room at the front.

This device may, as above stated, be formed in the chimney; or it may be made separate and connected with the chimney; or it may be formed at top and bottom with suitable stove-pipe collars, so as to be used in connection with any kind of stove or other heating apparatus, as may be desired.

In addition to the above, I provide the lower portion of the heating device with a series of horizontal tubes, B², passing through the front C, and extending rearward through the rear cold-air chamber, A, into a flue, F, at the back, said flue extending upward and communicating with the chimney, thus forming a draft through said tubes B², whereby ventilation is secured.

It will readily be understood that the hot air escapes at the front into the room, and as the foul air settles downward the same is carried out through the flues B², through the back flue, F, and into the chimney. A perfect system of ventilation is thus established, a continual supply of heated air being furnished, and at the same time the foul air at the bottom is drawn off as fast as it descends.

My heater may be applicable to chimneys or stoves so located that two rooms on the same floor may be heated by it.

In Fig. 4 of drawings I have shown my device as it is used in heating and ventilating railway-cars. The device is placed upon an ordinary car-stove, A', as shown. The cold air enters from the outside of the car at E, and is carried to the chamber A, and thence through the pipe B into the car. When the air becomes foul it passes downward through the register *e* at the opposite end of the car, and is carried through the chamber *f* and off through the pipe *g*, extending upward and out of the top of the car.

The smoke is carried off through a pipe, *c*, which is connected with the pipe *g*, as shown.

By this arrangement the car is kept in a per-

fect state of ventilation and the heating functions of the stove greatly facilitated.

My device may also be arranged within an ordinary stove-pipe, where it will perform its functions of heating and ventilating equally well.

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

The combination of the cold-air chambers

A D, the two systems of pipes B B', chamber D', with apertures *a*, and the front C, substantially as and for the purposes herein set forth.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in presence of two witnesses.

JAMES J. BROWN.

Witnesses:

P. C. DIETERICH,
WM. B. UPPERMAN.