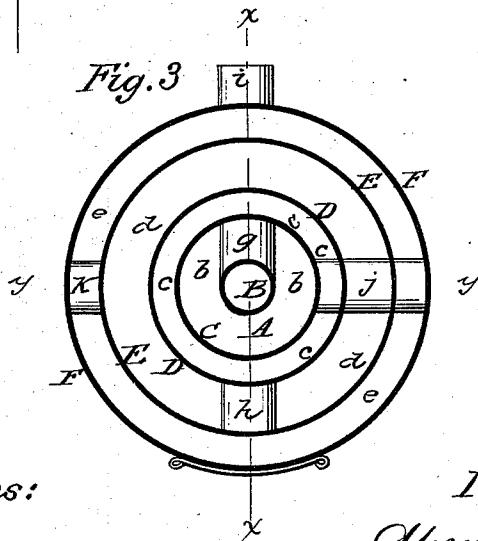
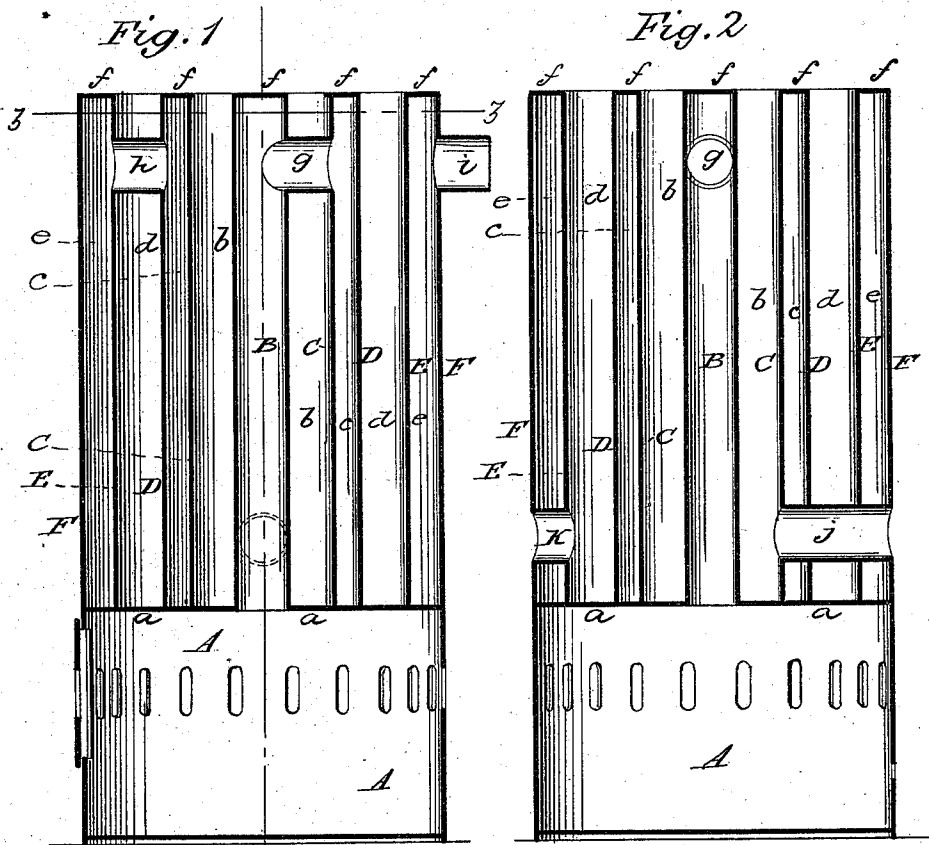


W. J. HAYS.

Gas Stove.

No. 97,913.

Patented Dec. 14, 1869.



Witnesses:
Wm. T. Brooks
Edgar Tate

Inventor
Wm. J. Hays
PER *Wm. J. Hays*
Attorneys

United States Patent Office.

WILLIAM J. HAYS, OF NEW YORK, N. Y.

Letters Patent No. 97,913, dated December 14, 1869.

GAS-STOVE.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Be it known that I, WILLIAM J. HAYS, of the city, county, and State of New York, have invented a new and improved Gas-Stove; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to make and use the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 represents a vertical longitudinal section of my improved gas-stove, the plane of section being indicated by the line *x x*, fig. 3.

Figure 2 is a vertical transverse section of the same, the plane of section being indicated by the line *y y*, fig. 3.

Figure 3 is a horizontal section of the same, taken on the plane of the line *z z*, fig. 1.

Similar letters of reference indicate corresponding parts.

This invention has for its object to construct a gas-stove with an extended radiating surface, and with proper air-channels, so that with a comparatively small amount of heat the air in an ordinary-sized room can be properly warmed.

The invention consists in the construction of annular air-passages, arranged within and around annular gas-passages, and in the connection with each other of the said gas-passages, as hereinafter more fully described.

A, in the drawing, represents a fire-box, of cylindrical or other equivalent form, adapted to receive the gas or oil-burners, from the flames of which the requisite heat is to be derived.

The box A is covered by a plate, *a*, which has only one aperture in the centre, leading to a vertical pipe, B, that projects from the box.

Four vertical pipes, C, D, E, and F, differing in width, but not in height, are placed upon the box A, around the pipe B, forming annular chambers *b*, *c*, *d*, and *e*, respectively, around the same.

The outermost pipe, F, is about as large as the box A, as shown.

The pipe B and chambers *c* and *d* are closed at their upper ends by plates *f*, while the chambers *b* and *e* are open on top, as shown.

The products of combustion pass from the box A into the pipe C, and ascend to the upper end of the same, whence they are conducted by a horizontal pipe, *g*, into the upper part of the chamber *e*.

From this chamber they are, through another transverse pipe, *h*, which may be near the lower end of the vertical flues, conducted into the chamber *e*, whence they escape into the smoke-pipe *i*.

The products of combustion, while passing from the fire-box A to the smoke-pipe, move along all the pipes B, C, D, E, and F, and heat their surfaces.

Cold air enters the lower ends of the chambers *b* and *d*, through horizontal pipes *j* and *k*, respectively, and is, while ascending in the chambers *b* and *d*, exposed to the heated surfaces of the pipes B, C, D, and E, while the pipe F will heat the air surrounding the apparatus. Thus the heat of the burning gas or oil is almost entirely utilized.

It is evident that the number of pipes on the fire-box may be varied, and that thereby the invention is applicable to heaters of greater or less extent.

Having thus described my invention,

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

The combination of the fire-box A with the vertical pipes B, C, D, E, &c., which form series of annular air and gas-passages, and with the transverse pipes *g* and *h* and *j* and *k*, all arranged substantially as herein shown and described.

WM. J. HAYS.

Witnesses:

GEO. W. MABEE,
ALEX. F. ROBERTS.