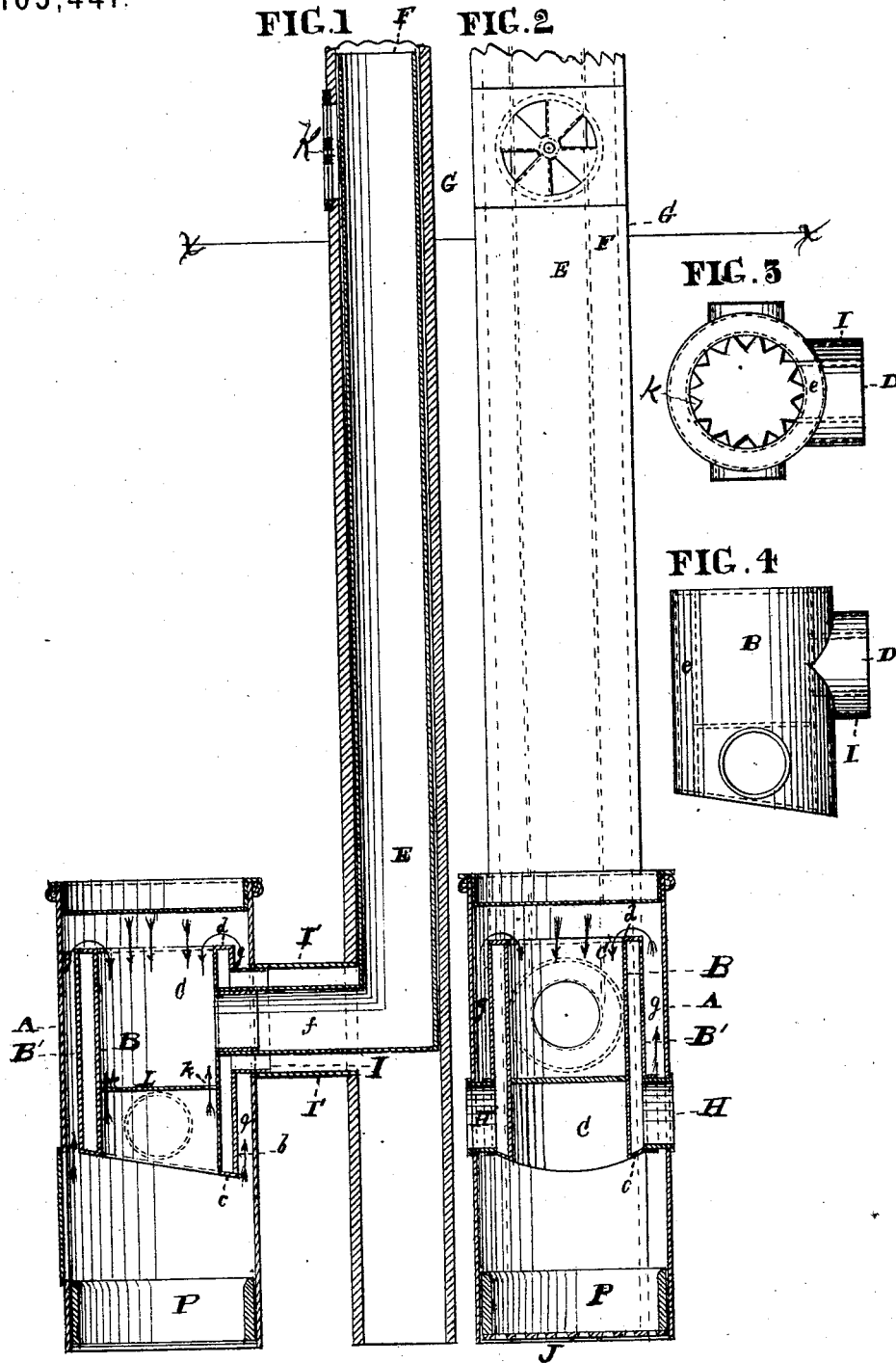


J. D. AVIL.
Heating-Stove.

Patented May 18, 1875.

No. 163,441.



WITNESSES

Thomas J. Dewley.
Leonard O. Smith

INVENTOR.

John D. Avil
By His Attorney
Stephen Utick

UNITED STATES PATENT OFFICE.

JOHN D. AVIL, OF PHILADELPHIA, PENNSYLVANIA.

IMPROVEMENT IN HEATING-STOVES.

Specification forming part of Letters Patent No. **163,441**, dated May 18, 1875; application filed April 25, 1872.

To all whom it may concern:

Be it known that I, JOHN D. AVIL, of the city and county of Philadelphia, in the State of Pennsylvania, have invented certain Improvements in Heating-Stoves, of which the following is a specification:

My invention is of an improvement in what may be called a double-cylinder stove for warming or heating air in the room in which the stove is located, and also in the room above it, or in the second story; and my invention consists in the peculiar construction and combination of a plate having openings at its periphery with the inner cylinder of the stove, for the purpose of better equalizing the heat of the air of both the upper and lower rooms, as will be more fully described herein, with reference to the accompanying drawing, in which—

Figure 1 is a vertical section of the stove A and chimney G, with which it is connected. Fig. 2 is a vertical section of the stove at right angles to Fig. 1. Fig. 3 is a plan view of the double cylinders B and B'. Fig. 4 is a side elevation of the same.

Like letters of reference in all the figures indicate the same parts.

A is the body of the stove. B and B' are inner and outer cylinders, seen in detail in Figs. 3 and 4. They are connected at bottom and top by means of the annular plates *c d*, leaving a central space, *e*, between it and the cylinder B'. A collar, D, is connected with the rear side of the inner cylinder B, which connects with the elbow *f* of the smoke-pipe E, that passes up through the flue F of the chimney G. At opposite sides of the stove there are short pipes, H H, through which the external air passes into the annular space *e* between the cylinders B and B'. The rear side of the outer cylinder B' is provided with a collar, I, that connects with the surrounding hot-air pipe I', the said pipe communicating with the flue F of the chimney. The bottom of the cylinders inclines downward, as seen in Figs. 1, 2, and 4, so as to incline the heat from the fire-place P to the rear part of the stove, and thus to spread it around the stove in the annular space *g*.

The operation of my invention is as follows: The hot gaseous products of combustion,

together with the air-draft through the incandescent fuel of the fire-pot, pass directly upward—one portion through the openings at the periphery of the plate L, and the remaining or larger portion through the annular space *g* to the space *d*, and then downward into C, where it meets the portion which is rising from the openings around the periphery of the plate L, and, mingling, together pass into the exit-pipe E, and escape into the chimney at any suitable point above the register K, which communicates with the hot-air flue F at any suitable place above the floor *x x* in the second story of the building, or the next story above that in which the heating-stove is placed. The space between the sides of the upper end of the pipe E and of the flue F, just above the register K, is of course intended to be closed in an air-tight manner.

The air which is to be heated enters the pipes H H into the annular space *e*, and is heated by the hot gaseous products of combustion, which pass from the fire-chamber of the stove upward through the annular space *g*, and then downward into C, and also by the hot products of combustion, which at the same time pass upward through the open spaces in the periphery of the plate L into C, and the air thus heated in the annular space *e* passes horizontally through the short pipe I' into and upward through the flue F, to and out through the opened register K into the room in the second story of the building, the said air having been still further heated during its passage through the flue F by the heat radiated by the smoke-flue E. During the operation of heating air for the room in the second story, as just described, the outside walls of the stove, being strongly heated by the gaseous products of combustion passing upward through *g* into C, radiate sufficient heat to warm the air in the room in which the stove is located; and it will be readily seen that if the plate L were dispensed with, nearly all the hot products of combustion, and the heat radiated by the incandescent fuel also, would pass into C, and thence directly into the smoke-pipe, and consequently the outside walls of the stove would not be sufficiently heated to warm the air of the room in which the stove is located, and, moreover, the air in *e* would not be so strongly

heated. The effect of the plate L is, therefore, to divide the hot gaseous products of combustion between *g* and C, in order to more nearly equalize the heated air of the first and second story rooms.

I claim as my invention—

The combination, in an air-heating stove, substantially as described, of the plate L, pro-

vided with openings at its periphery, as described, with the cylinders B and B', which surround the central space C, for the purpose hereinbefore described.

JOHN D. AVIL.

Witnesses:

THOMAS J. BEWLEY,
STEPHEN USTICK.