D. M. CUMMINGS.

Heating Drum.

2 Sheets—Sheet 1.

No. 56,015.

Patented July 3, 1866.

Fig. 1

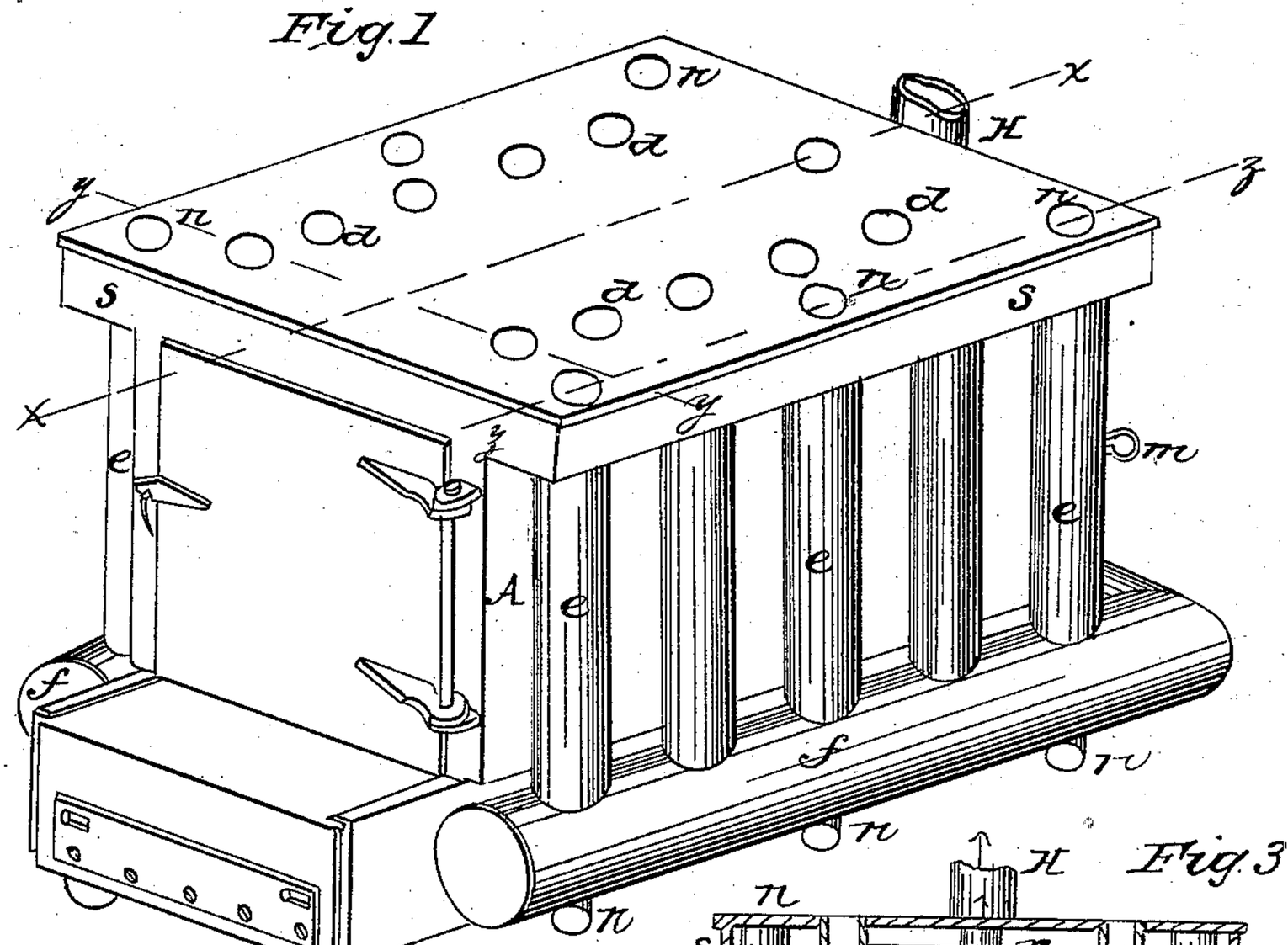
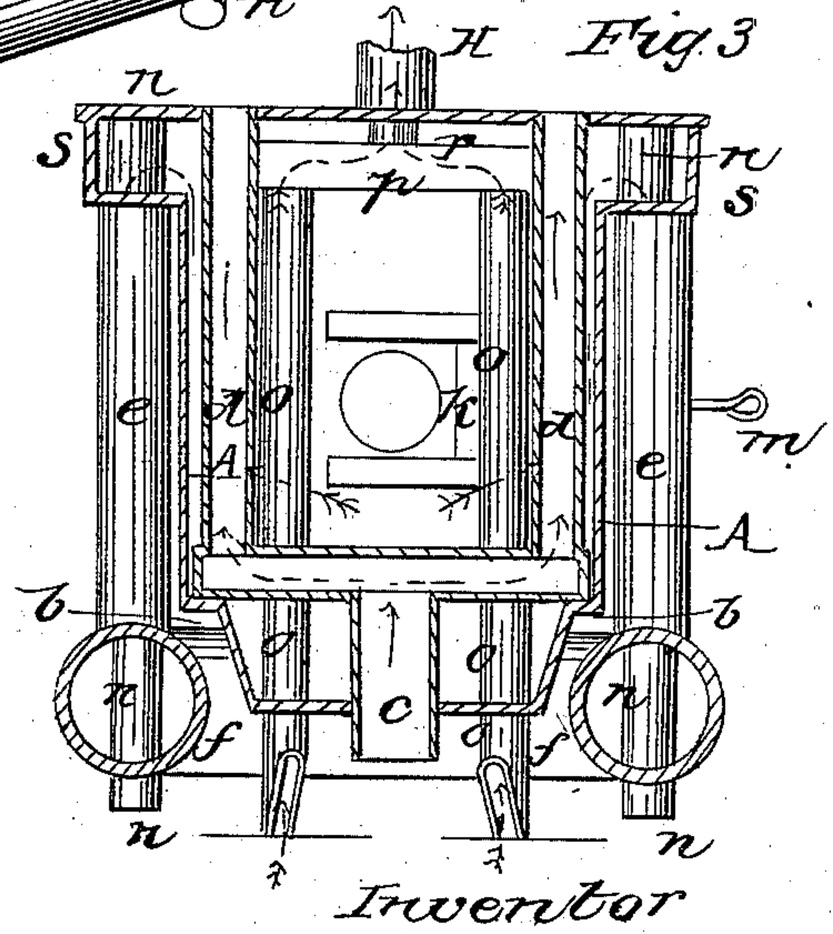


Fig. 3



Witnesses

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D. M. CUMMINGS.

Heating Drum.

2 Sheets—Sheet 2.

No. 56,015.

Patented July 3, 1866.

Fig. 2.

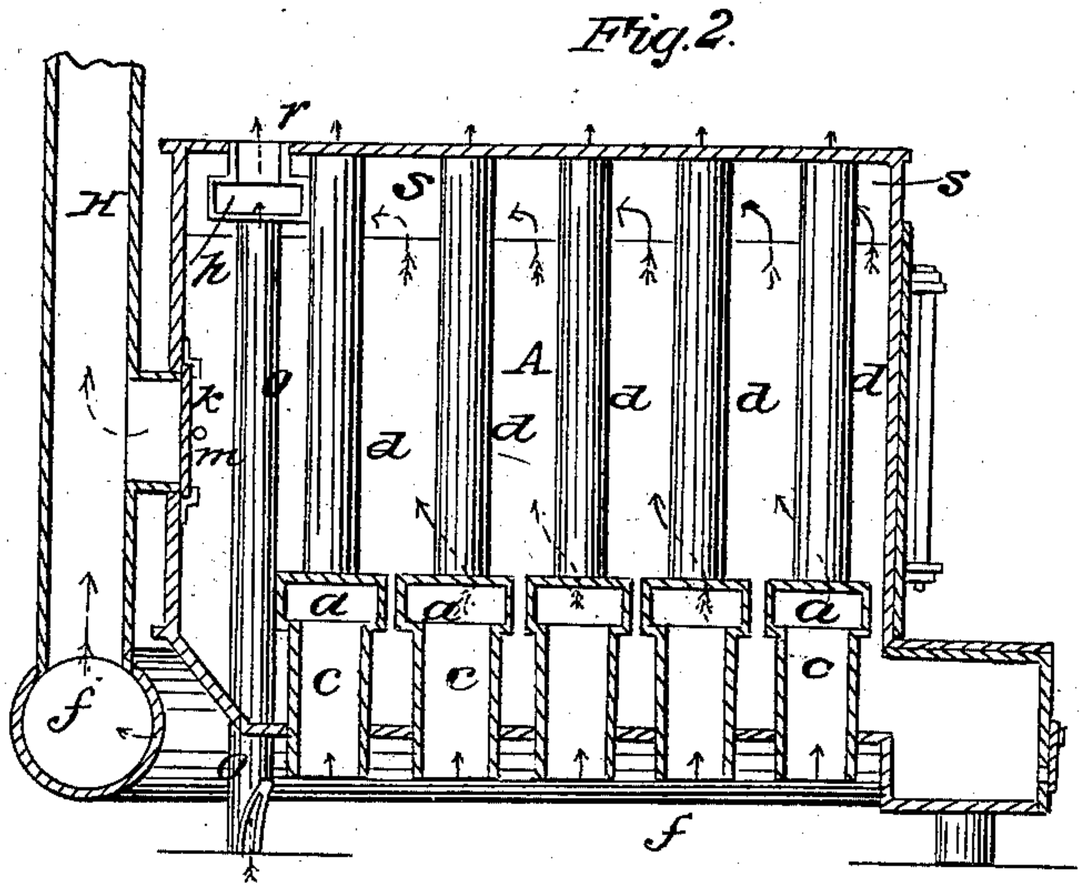
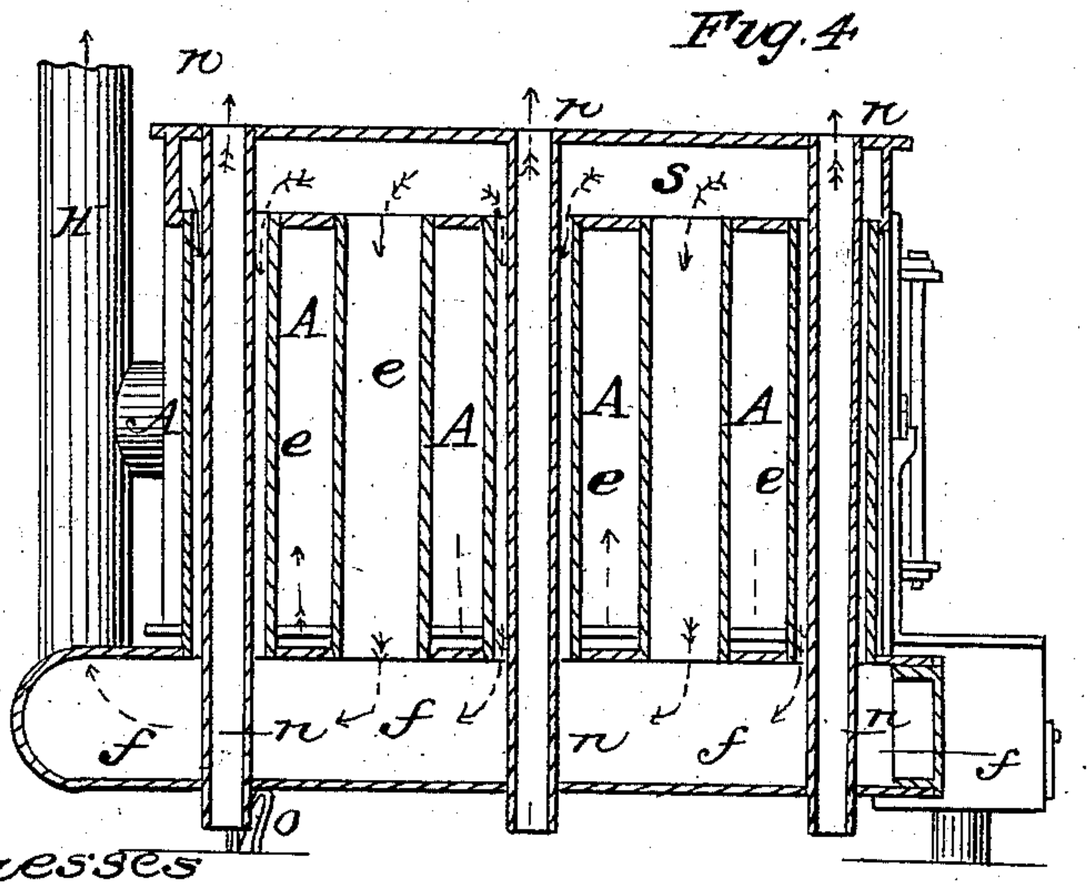


Fig. 4



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UNITED STATES PATENT OFFICE.

DANIEL M. CUMMINGS, OF ENFIELD, NEW HAMPSHIRE.

HEATING-STOVE.

Specification forming part of Letters Patent No. **56,015**, dated July 3, 1866.

To all whom it may concern:

Be it known that I, DANIEL M. CUMMINGS, of Enfield, in the county of Grafton and State of New Hampshire, have invented a new and useful Improvement in the Construction of Stoves; and I do hereby declare that the following is a full and clear description thereof, reference being had to the accompanying drawings, which form a part of this specification, and in which—

Figure 1 is a perspective view of a stove constructed in accordance with my invention; Fig. 2, a longitudinal vertical section thereof through the line *x x;* Fig. 4, a similar section through the line *z z*, and Fig. 3 a transverse section through the line *y y* of Fig. 1.

Similar letters indicate like parts in all of the figures.

The nature of my invention consists in inserting or forming a series of cold-air pipes or flues through a stove, to open below the stove, near the floor, and also above it. When they are heated the cold air will be drawn into these pipes from the lower portion of the room, and in passing upwardly will be warmed, and so discharged into the upper portion thereof, thus creating a continued circulation of air from the floor to the ceiling, by taking up and heating the cold stratum from below and replacing it by the heated atmosphere from above.

I contemplate applying my invention to various forms and descriptions of stoves by inserting the cold-air flues through the same or some portion thereof, to open outwardly below and above the same; but in order to enable those skilled in the manufacture of stoves to construct one which shall embody many of the various forms of application which my invention embraces, I will proceed to describe its construction and operation.

The box A of the stove is constructed in the usual manner, of sheet metal or metallic plates, but is provided with hollow grate-bars *a*, of any convenient form, which rest upon a ledge or supporting-recess, *b*, Fig. 3, on each side of the fire-chamber, and divide it from an ash-pit below. To the center of each grate-bar is connected a vertical flue, *c*, opening thereinto and also outwardly below the stove near the floor, as seen in Figs. 2 and 3 of the drawings, and each end of the grate-bars opens into vertical flues *d*, extending upwardly on each side of the fire-space within the fire-box, as seen in Fig. 3, and opening outwardly at the top of the stove, Fig. 1.

A projection, *s*, is formed in the box of the stove, along the sides thereof, under the top-plate, making extended recesses thereat the entire length of each side, as seen in Fig. 2, into which are connected a series of vertical hot-air and smoke flues, *e*, placed parallel with the sides of the stove, and terminating on each side in a horizontal flue, *f*, near the bottom of the stove, which connects at the back of the stove with a chimney-pipe H. An opening is formed in the back of the stove, a little below the center thereof, which also communicates directly with the chimney-pipe H; but this opening may be closed at pleasure by a sliding damper, K, of the usual form, operated by a rod, *m*.

Through the center of every alternate hot-air flue *e e*, which are placed parallel with the sides of the stove, and which, when the damper K is closed, form escape-channels for the smoke and gases of combustion, I insert a cold-air pipe, *n*, opening outwardly, both above and below the stove, as seen most clearly in Fig. 4 of the drawings; and to perfect and complete the system of cold-air tubes, I place a pair of them, *o o*, in the rear end of the fire-box, in such a position as that their lower extremities may serve as the hind feet or supports of the stove. The upper ends of these tubes *o o* are connected by a cross tube or flue, *p*, within the fire-box, having a central pipe, *r*, opening outwardly on the top of the stove, as seen in Figs. 2 and 3.

I contemplate the use of all of the cold-air tubes, *d e o*, arranged as herein described, or of any one system thereof alone, having illustrated all to give a more complete detail of the applications of my invention.

The operation of my improved stove is as follows: When a fire is kindled upon the grate-bars within the fire-box A the damper K is at first left open, to secure a more direct draft out to the chimney-pipe H; but so soon as the fuel is fairly burning the damper is closed more or less, causing thereby the hot air, smoke, and products of combustion to pass over (as indicated by red arrows in the drawings) under the top of the stove, down through the side flues, *e*, and thence along the horizon-

tal flues *f* to the chimney H. (See Fig. 4.) The vertical cold-air flues *c d*, opening into and through the grate-bars, as well as those, *n o*, which are inserted in the side hot-air flues and in the rear of the fire-box, become heated by the fire, and this at once causes a strong upward current (as indicated by the blue arrows in the drawings) within them, which draws the cold air from below the stove near the floor, and, heating it in its ascent, carries it upward to the upper portion of the room. By this means a constant change and circulation of air is produced in the room, the cold air near the floor being first heated and carried upward, and a room may be thoroughly heated with much less fuel than with the ordinary forms of stoves.

The currents of air constantly passing through the tubes prevent them from becoming so highly heated as to produce that dry irritable quality of atmosphere which results from overheating it in contact with very hot plates.

I am aware that air-flues have heretofore been introduced through smoke-pipes and drums, and I make no claim thereto; but,

Having fully described my invention, I claim as a useful improvement in stoves and desire to secure by Letters Patent—

1. The combination and arrangement of air flues or passages *c a d o n r*, together or singly, with the fire box or chamber of a stove constructed for heating purposes, substantially in the manner and for the purpose herein set forth.

2. The combination and arrangement of the direct air-flues *n* with the radiating flues *e f* of a heating-stove, A, substantially in the manner and for the purpose herein set forth.

The foregoing specification of my improved stove signed by me this 23d day of April, A. D. 1866.

DANIEL M. CUMMINGS.

In presence of—

GEO. W. CONANT,

WM. J. MARDEN.