J. K. DIMMICK & F. A. STINE.

FIRE-PLACE STOVES.

No. 195,104. Patented Sept. 11, 1877.

Fig. 1

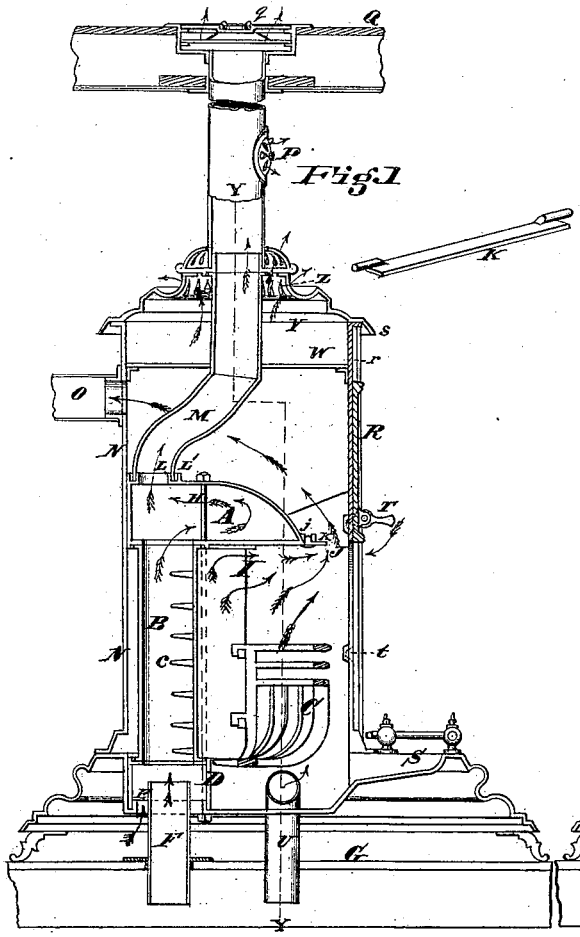


Fig. 2

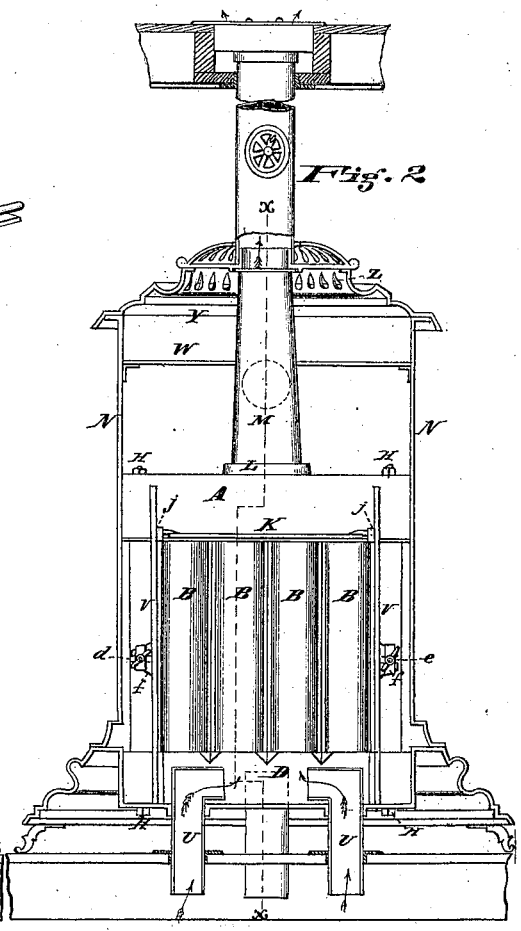


Fig. 3

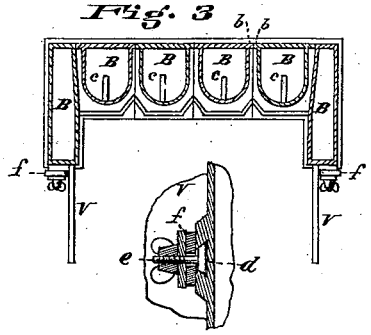
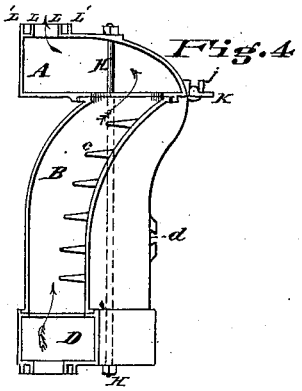


Fig. 4



Witnesses:
Edgar J. Gross
John E. Jones.

Inventors:
Jacob K. Dimmick &
Frederick A. Stine
By Y. Millward
Attorney

UNITED STATES PATENT OFFICE.

JACOB K. DIMMICK AND FREDERICK A. STINE, OF CINCINNATI, OHIO.

IMPROVEMENT IN FIRE-PLACE STOVES.

Specification forming part of Letters Patent No. **195,104**, dated September 11, 1877; application filed April 14, 1877.

To all whom it may concern:

Be it known that we, JACOB K. DIMMICK and FREDERICK A. STINE, both of Cincinnati, Hamilton county, State of Ohio, have invented Improvements in Stoves and Fire-Places, of which the following is a specification:

Our improvements relate to the construction of stoves with open fire-places, arranged to heat air in an inclosed chamber for conduction to the same or other rooms.

In the accompanying drawings, Figure 1 is a vertical section of our fire-place stove through the line *x x* from front to rear. Fig. 2 is a vertical section through the line Y Y of Fig. 1. Fig. 3 is a cross-section, showing the heating-pipes, side jambs, and other parts. Fig. 4 is a view showing another method of forming the heat-pipes which form the back of the fire-place, this form being shown in a former patent granted to Jacob K. Dimmick, January 16, 1877.

One part of our improvement consists in making the back of the fire-place with pipes which describe straight lines from bottom to top, and unite with the receiver, which covers the entire grate-basket, so that the pipes receive heat only sidewise, and the crown of the fire-place is the bottom of the hot-air chamber, to which these pipes connect.

To this end we make the receiver A, as shown, with a flat bottom, and support the same upon vertical pipes B, which extend from the lower face of the chamber A to a point at or below the bottom of the grate-basket C, where they are attached to the cold-air receiver D, which receives air freely through the annular opening E, and, in addition thereto, if necessary, through the pipe F from the cellar below the floor G, on which the fire-place stove is located. The pipes B have flanges at each end, fitting sockets in the top of the cold-air receiver and bottom of the hot-air receiver, as shown, and these parts are joined together by the binding-rods H, similar to the construction shown in the Dimmick patent aforesaid. By reason of the straight form of the pipes B, and the extension entirely over the fire of the chamber A, a capacious chamber is formed with a deep recess, into which the flame and gases have to pass and reverberate, which results in a great amount of heat being imparted to the air inside the pipes B and chamber A, and also creates a large reverberating-chamber, I, in which the gases are permitted to circulate and unite, so as to effect a complete combustion and the radiation of a great amount of heat into the room from the fire-place.

We provide a means for changing the width of the smoke-throat J of the fire-place; and this consists in a provision of journal-bearings *j* at the sides of the hot-air chamber, and the swinging damper K, journaled therein, as shown, and having two positions—one when folded back against the receiver A, leaving a wide smoke-throat, and the other when folded down, as seen in Fig. 1, and leaving a narrow smoke-throat.

By means of two circular flanges, L L′, concentric with each other, and of different diameters, we form an annular trough, into which the hot-air conducting-pipe M is received, and in this trough cement may be poured or calked to make an air-tight joint.

In the Dimmick patent aforesaid the fire-place heater therein shown was designed only for attachment to ordinary fire-places in the walls of buildings. Our improvement enables us to acquire all the advantages of the vertical pipe-heater therein shown, with the additional advantage of locating the fire-place and heater away from the wall, stove-like, and this we accomplish by incasing the fire-place heater in a shell, N, as shown, in which the pipes and receivers are placed, and in which, above the hot-air receiver, the gases transmitted through the smoke-throat are received for conduction through pipe O to the chimney. This combination gives a heating-surface entirely around the fire-place, from which heat can be radiated into the room from all sides, and at the same time incloses the heating-chambers for the cold air, which, after heating, can be conducted into the room in which the stove is located through the register P, or through the pipe M to an upper room, Q, through the register *q*.

Another part of our improvement consists in the provision and attachment of a sliding blower-plate, R, which slides in ways *r* at the sides of the stove, and is capable of being adjusted at any point in its range of motion from the hearth-plate S to the rim or flange *s*, and secured at any point of adjustment by means

of the gravitating catches T, whose inner ends enter notches or apertures *t* in the ways *r*. By means of this sliding blower-plate and its means of adjustment, we are enabled to facilitate the starting of the fire, by lowering it to a position near the top of the grate-basket, or to convert it into a damper to limit the admission of air by lowering it onto the hearth-plate.

Another feature of our improvement is in the peculiar formation of the heating-pipes which form the back of the fire-place, and this consists in providing each pipe with flanges *b* at the back, which unite in the manner shown in Fig. 3, so that a closed back is formed for the heater, while the front is composed of convex surfaces, separated so as to leave spaces extending nearly the entire depth horizontally of the pipes B. We are thereby enabled to prevent the gases from passing in behind the heater, while we expose a great amount of heating-surface in front of the back line of the heater.

Another feature of our improvement consists in providing inward projections *c* to the pipes B, which may be ribs or flanges or pins. These projections serve to conduct the heat from the outer surfaces of the heating-pipes to the central parts of said pipes, so that the columns of air passing up said pipes may be heated centrally, in addition to the heat they receive from the inner surfaces of the pipes.

The top of the hot-air receiver is curved backward toward the discharge-pipe O to facilitate the draft.

We supply air to the grate-basket from under the floor G, so that the draft of cold air passing along the floor of the room to feed the fire is considerably lessened, and thereby extreme cold drafts into the room are avoided; and we accomplish this by means of a pipe or pipes, U, secured in the floor G of the room, and passing up to the position shown in the drawings. The pipe passes vertically up into the ash-pit, and terminates in a horizontal branch to distribute the air in some measure before it passes up through the grate.

Another feature of our improvement consists in the formation upon the side pipes B of the heater, which extends farther forward into the fire-place than the back pipes, as shown, of slots *d*, into which bolts *e* are received, which secure the ears or lugs *f* of the side jambs V of the stove. By means of these bolts, slots, and ears we are enabled to adjust these side jambs to different sizes of shell N, and thereby are enabled to apply different-sized heaters to the same sized stove, and this adjustment also enables us to accurately adjust these side jambs to the shell of the stove. The pipes B, which are at the side of the fire-place, extend so far forward of the line of the other pipes as to enable us to pass the binding-rods H through said pipes, as shown in the Figs. 1 and 2.

A plate, W, is interposed between the fire-place and the top of the stove, so as to form a chamber, Y, from which heated air may escape into the room through the holes Z. This plate W, furthermore, prevents the collection of soot in the space above the discharge-pipe O, and serves to conduct the gases in a direct course to the pipe O.

I claim—

1. In a heater for fire-places, the combination of vertical pipes B, laterally connected to form a close fire-back, and extending in vertical lines from the bottom of the grate-basket to the crown of the fire-place, and joined to a hot-air receiver which projects over the fire, substantially as and for the purpose specified.

2. The combination of pipes B, laterally connected to form a closed fire-back and vertical throughout or arching over the fire, hot-air receiver A extending over the fire, hot-air conducting-pipe M, and stove-shell N O, substantially as and for the purpose specified.

3. In combination with the stove-shell N and fire-place C, the sliding adjustable blower-plate R and gravitating catches T, operating substantially as and for the purpose specified.

4. The pipes B, formed with flanges *b*, substantially in the manner and for the purpose specified.

5. The pipes B, formed with interior projections *c*, projecting inward from the side directly exposed to the fire, substantially as and for the purpose specified.

6. The combination of side pipes B, slots *d*, bolts *e*, lugs *f*, and side jambs V, substantially as and for the purpose specified.

In testimony of which invention we hereunto set our hands.

JACOB K. DIMMICK.
FREDERICK A. STINE.

Witnesses:
J. L. WARTMANN,
F. MILLWARD.