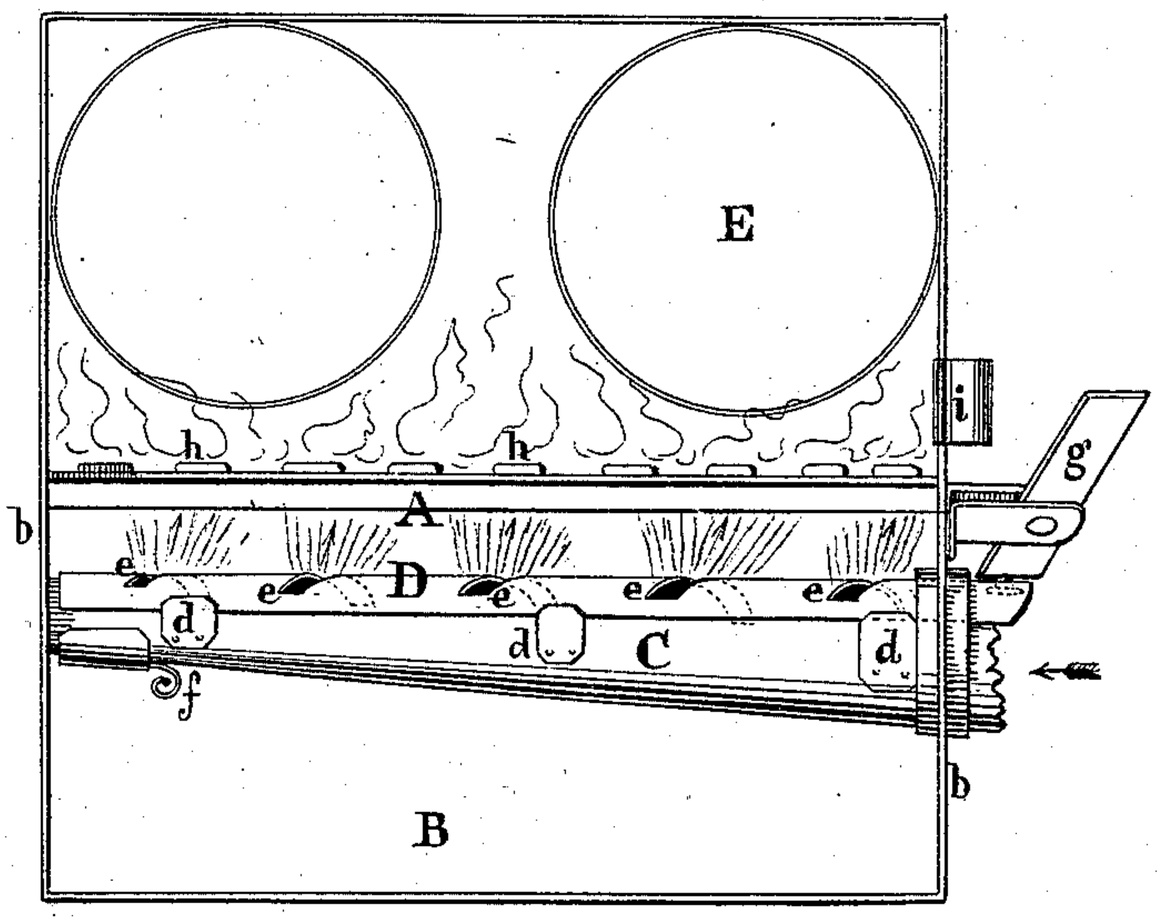
A. J. CREIGH.

Air-Distributing Pipes for Furnaces.

No. 150,401. Patented May 5, 1874.

Fig. 1.



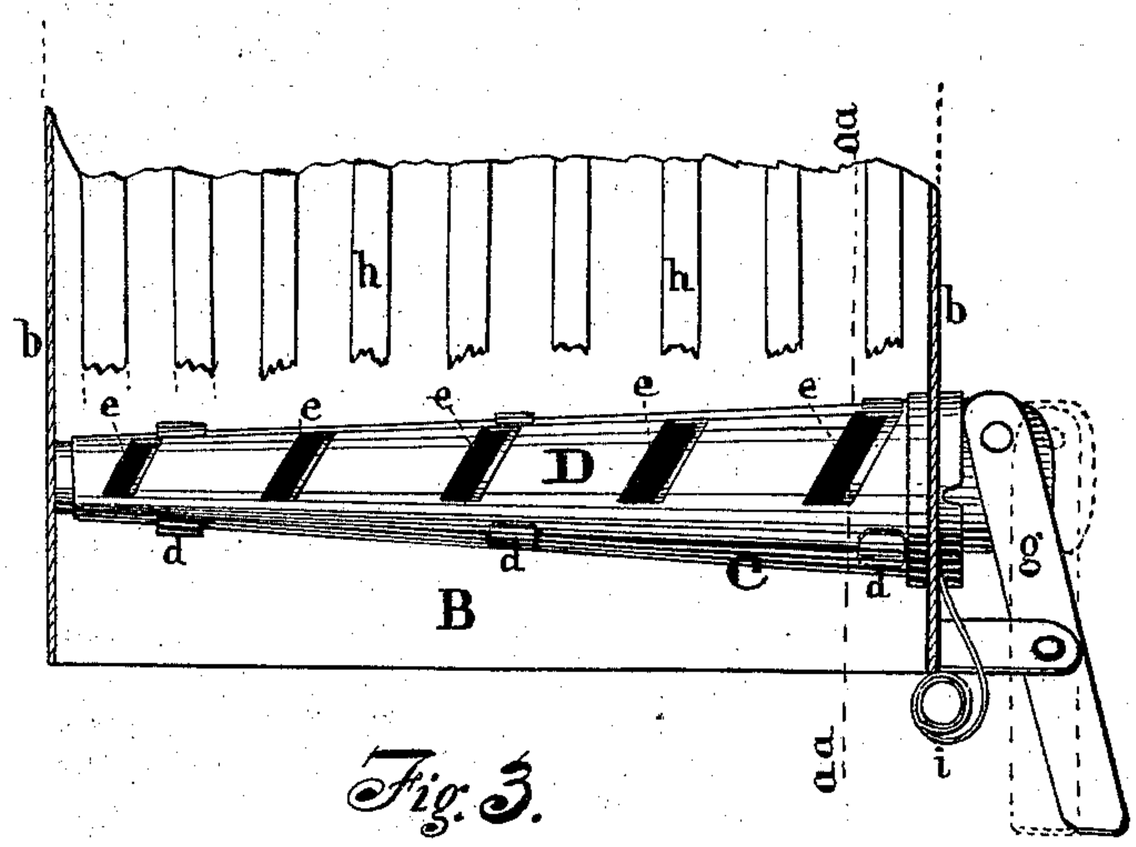


Fig. 3.

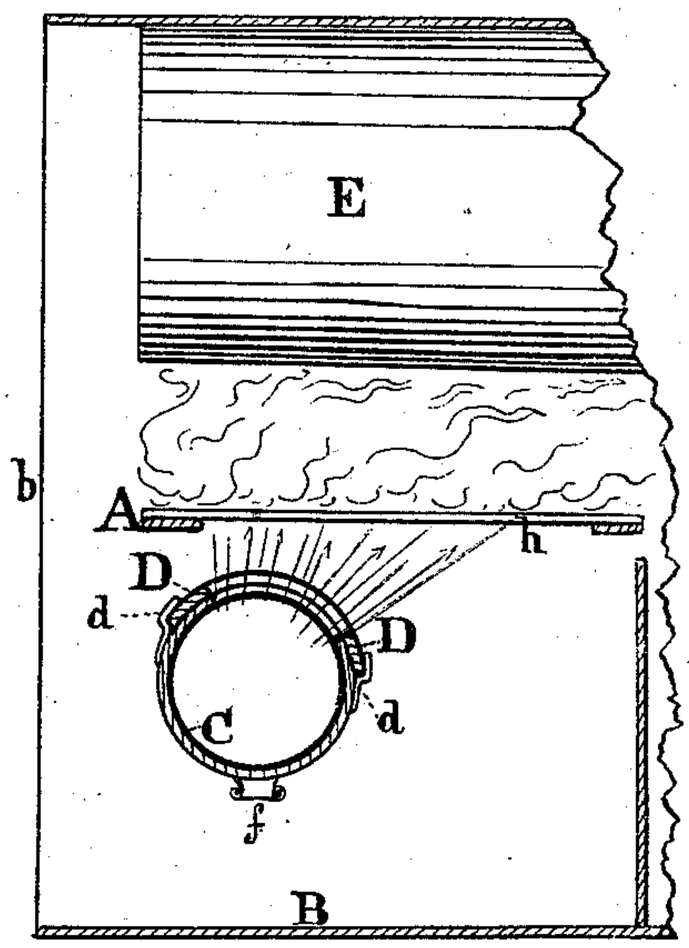


Fig. 2.

Witnesses
Clarence Thurlow
James Thurlow

Inventor—
Alfred J. Creigh,
by E. Thurlow, his Atty.

UNITED STATES PATENT OFFICE.

ALFRED J. CREIGH, OF MANSFIELD, OHIO.

IMPROVEMENT IN AIR-DISTRIBUTING PIPES FOR FURNACES.

Specification forming part of Letters Patent No. **150,401**, dated May 5, 1874; application filed March 17, 1874.

To all whom it may concern:

Be it known that I, ALFRED J. CREIGH, of Mansfield, in the county of Richland, in the State of Ohio, have invented an Improvement in Air-Distributing Pipes for Furnaces; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the annexed drawings making a part of this specification, in which like letters of reference refer to like parts, and in which—

Figure 1 represents a front elevation of furnace and pipe; Fig. 2, a side sectional elevation of the furnace, grate, and cross-section of the pipe, along dotted line *a a a a*, Fig. 3; Fig. 3, a superficial or top view of the pipe with grate broken away to give a clear view.

The object of this invention is to equalize the currents of air through the collective orifices in the distributing tube or pipe, so as to obtain an equal pressure at any point along said pipe, whether the same may run under one or more furnaces or steam-generators; and also that the escaping blasts shall be under the control of the operator, by the simple manipulation of an orificed cover slide, with oblique openings corresponding with the similar openings for air in a tapering pipe. This I do by employing a tapering pipe, whose diminishing caliber compensates for the progressive decrease of the advancing air-current—in other words, where this pipe receives the blast it is largest, and it diminishes in proportion to the successive outlets in its upper surface, so as to supply an equal blast or jet of air at each orifice. These latter are cut obliquely in that side of the pipe facing the grate above at suitable distances, the superior surface of the pipe being at the same time parallel with the line of the grate-bars. The pipe is covered above by a sliding plate, which conforms to the upper surface, and is pierced with orifices exactly corresponding with those in said pipe. It slides securely in guides, and is moved by a lever or similar device in regulating the currents of air from the pipe.

I will now describe one of the forms in which I make this apparatus.

In the drawings, A represents the grate; B, the ash-pit; C, the air tube or pipe tapering from that end which receives the blast from a fan or pressure-blower, and pierced with several orifices, *e e*, &c., for emission of air, running obliquely across its upper surface. It may be made of stout sheet-iron. At the end of the blast, or smaller end of said pipe, an ash or dust trap, *f*, is provided, which slides in cleats, so that dust may be got rid of, which might enter the orifices *e*. D represents a sliding cover, fitting snugly to the upper surface of the pipe C, and pierced with corresponding holes *e e*, &c. It slides in cleats *d d*, and is moved back or forth by a lever, *g*, on the outside of the furnace. E, steam-generators.

The operation of this invention is as follows: The pipe C is inflated by a pressure-blower, a full opening of the slide D giving a full blast upon the fire to supply oxygen and to cool the grate, saving by this means from one-sixth to one-fifth of the fuel. The pipe, by means of its tapering form, whether delivering a half or three-fourths blast, has still a large reserve of air, fully sufficient to prevent the burning of the pipe by heat, as no cut-off of the main current in the pipe is used between the pipe and the blower, this being done by the sliding cover.

I am aware that air-distributing pipes and sliding attachments as cut-offs have previously been used in furnaces; but I claim the peculiar form of the pipe C and arrangement of holes thereon, together with the orifices in the cover.

The advantages of the tapering pipe C and slide are, that it secures an equal pressure or equal jets of air for its entire length, whereas in the common forms of pipes for this purpose, and the mode of cutting off, or damping the blast at the furnace-jamb or outside of the ash-pit, has the effect, where part of the blast is cut off, to blow very strongly upon that part of the grate farthest from the cut-off, and much fainter from the intermediate orifices, or diminishing gradually toward the cut-off when situated on outside of the jamb *b*.

My invention does away with tall chimneys, as the natural draft is superseded by an artificial one, which is consumed directly in the fire, without creating extra draft in the chimney.

What I claim as my invention is—

A tapering tube, C, with oblique orifices *e*, in combination with a sliding cut-off, D, having orifices corresponding with those in the tube, and arranged to work in guides *d*, by means of a lever, *g*, substantially as and for the purpose set forth.

In testimony that I claim the foregoing improvement in blast-pipes for furnaces, I have hereunto set my hand this 11th day of March, 1874.

ALFRED J. CREIGH.

Witnesses:

H. W. WELLS,

JAMES M. MORSE.