

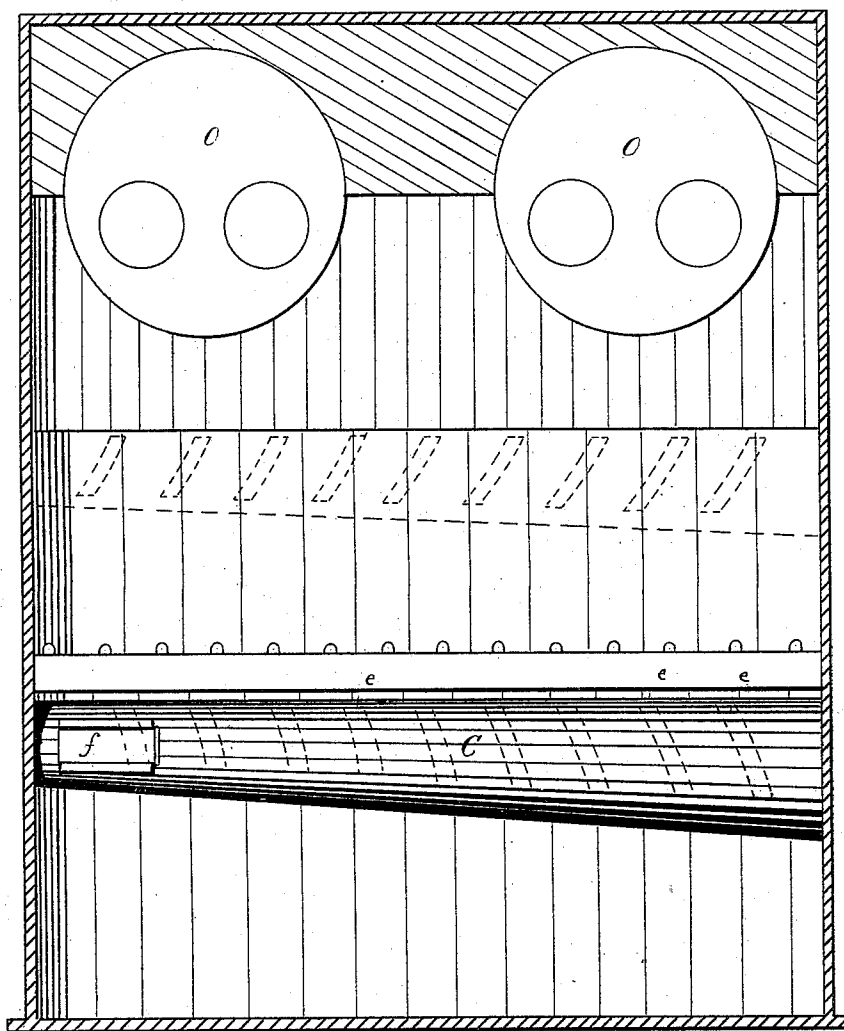
A. J. CREIGH.

DEVICE FOR SUPPLYING AIR TO FURNACES.

No. 172,093.

Patented Jan. 11, 1876.

*Fig 1.*



WITNESSES:

*B. C. Pole*  
*Yvon Pike*

INVENTOR.

*Alfred J. Creigh*

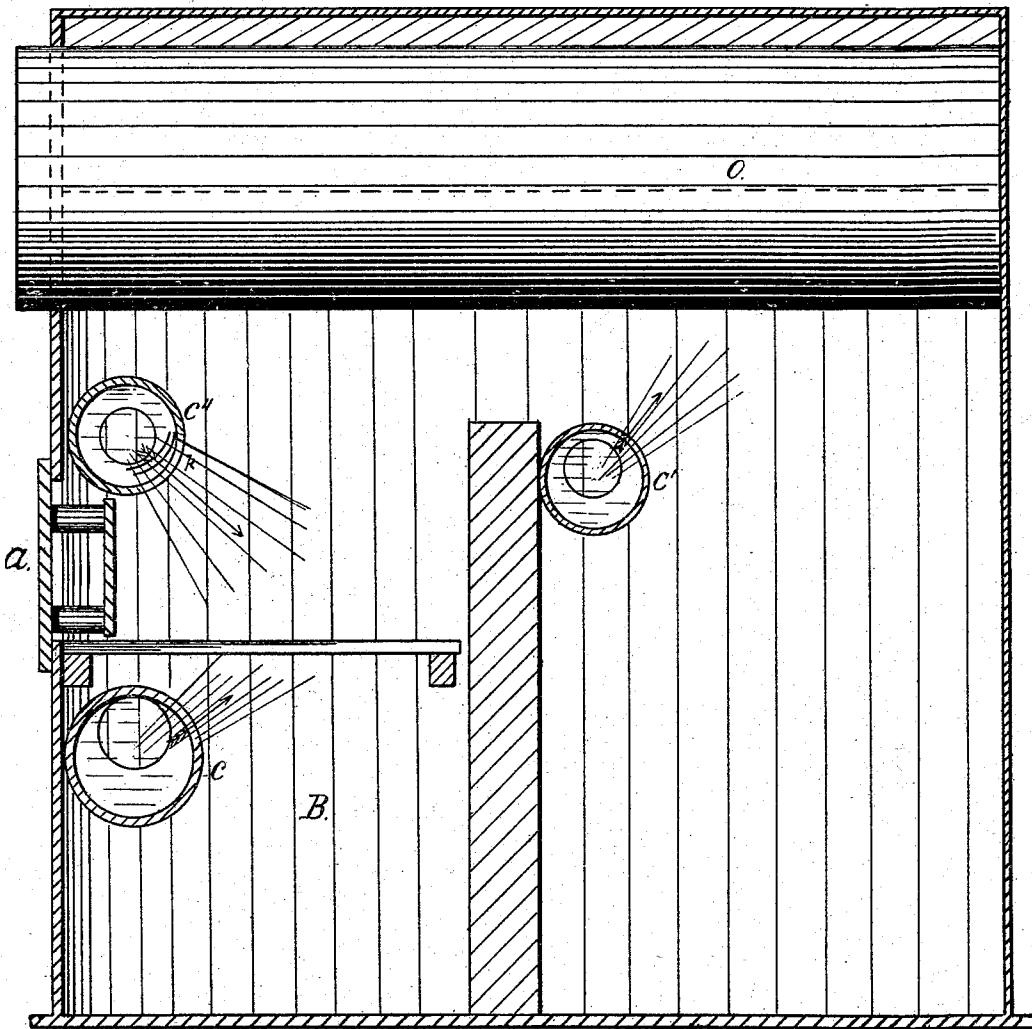
A. J. CREIGH.

DEVICE FOR SUPPLYING AIR TO FURNACES.

No. 172,093.

Patented Jan. 11, 1876.

Fig 2.



WITNESSES:

B. C. Foley  
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Fig 3.

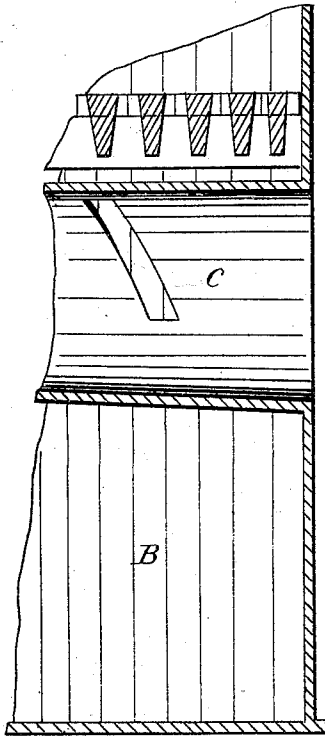
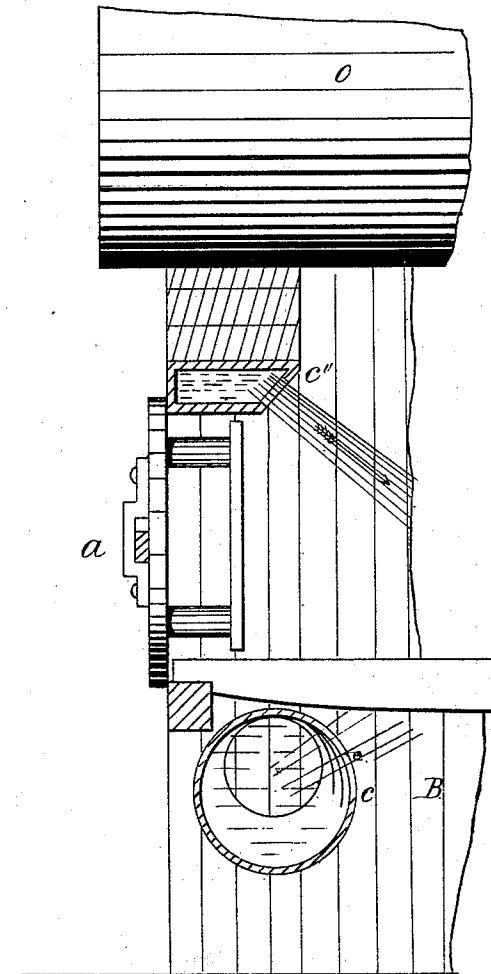


Fig 4.



WITNESSES:

B. C. Pole  
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INVENTOR.

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# UNITED STATES PATENT OFFICE.

ALFRED J. CREIGH, OF MANSFIELD, OHIO.

## IMPROVEMENT IN DEVICES FOR SUPPLYING AIR TO FURNACES.

Specification forming part of Letters Patent No. **172,093**, dated January 11, 1876; application filed January 7, 1876.

*To all whom it may concern:*

Be it known that I, ALFRED J. CREIGH, of Mansfield, in the county of Richland and State of Ohio, have invented certain new and useful Improvements in Combination of Air-Distributing Pipes for Burning Smoke and Saving Fuel in Furnaces; 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 which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

The object of this invention is to effect the total combustion of the fuel so that none escapes as smoke, and the whole heat is economized. This being done, I save from the invention from one-fourth to one-third of the fuel.

Figure 1 is a sectional front elevation. Fig. 2 is a side sectional elevation. Fig. 3 is a front section of tube and grate-bars. Fig. 4 is a sectional side elevation, with an equivalent form for air-pipe.

My invention relates to certain new and useful Improvements on Letters Patent No. 150,401, granted to me under date of May 5, 1874; and it consists in dispensing with the sliding covers over the orifices in the tapering tubes, and also in the combination of the tapering tubes, as will be hereinafter more fully described, and pointed out in the claim.

The tubes used in this combination and invention are three in number, all tapering, so that their diminishing caliber may compensate for the progressive decrease of the advancing air-currents; in other words, the pipes are largest where they receive the blast, and diminish in proportion to the successive outlets. The two lower tubes C and C' are, except as to the ash-traps, fac-similes of the air-distributing pipe described in the specification forming part of the aforesaid Letters Patent. The upper tube is also a tapering tube shaped to be close under the front of the boilers and along the upper part of the furnace, having orifices on the lower side to pour the air down among the burning fuel, and differing from the others in having a cut-off outside the jamb instead of a sliding cover, and also in curving

around the boilers and along the top of the furnace from side to side. The air-slots are in the diagonal face of the same. The capacity of the tubes must be suited to the work.

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

In the drawings, C represents the front pipe under the grate; C', the pipe to the back of the bridge-wall, and blows upward from the fire just below the level of the grate; C'', the pipe, square, round, or curved, to suit the boilers. The air is emitted at right angles to the opening. C and C' are pierced with several orifices, *e e e*, &c., for emission of air running obliquely across its upper surface. Along the bottom of the lower pipe one or more ash-traps, *f*, are provided, sliding in cleats from the center out at each end of the tube, by which dust may be got rid of. A scraper or duster may also be provided to be used from the outside of the furnace. C'' is pierced with slots. They are largest where the blast enters the tube, and diminish in size as the pipe diminishes. The orifices *e e e*, &c., emit the blast upward and backward, so that the central volume is emitted at forty or fifty degrees, but the orifices *k k*, &c., in the pipe emit the blast downward and backward at an angle of from thirty to thirty-five degrees. A is the gate; B, the ash-pit; O, the boilers; E, the bridge-wall; *b*, the jamb. Any or all the pipes may be made of suitable material that will stand the fire. With these pipes, and for the purpose of cutting off the natural draft, I make an opening in the breeching or chimney above the boilers, and regulate it by a sliding cover or door.

The operation of this invention is as follows: The three pipes are inflated by a pressure-blower or a fan. The tapering form equalizes the distribution of the air, giving the same quantity from each jet or opening. From C through the orifices *e e*, &c., the air pours upward among the fuel, supplying oxygen for combustion, while from C'', through the orifices *k k*, &c., the air pours downward and backward, meeting the smoke driven off and forcing its combustion. From C' back of the bridge-wall, through its orifice *e e e*, &c., comes more oxygen to catch and unite with any carbon escaping the air of the front tubes.

From this combination no smoke can escape, the entire fuel is burned, and the economy, as before stated, is from one-fourth to one-third of the entire fuel used with the natural draft; and from this description fully appears the advantages of the combination of pipes.

Having thus described the construction and operation of my invention, what I claim as my invention, and desire to secure by Letters Patent of the United States, is—

In a furnace provided with air-distributing

pipes, the naked tapering tubes  $C\ C'\ C''$ , provided with orifices  $e\ k$ , for emitting the air-blast at different angles, substantially as described, and for the purpose set forth.

In testimony that I claim the foregoing as my own invention I affix my signature in presence of two witnesses.

ALFRED J. CREIGH.

Witnesses:

PARKER H. SWEET, Jr.,  
YVON PIKE.