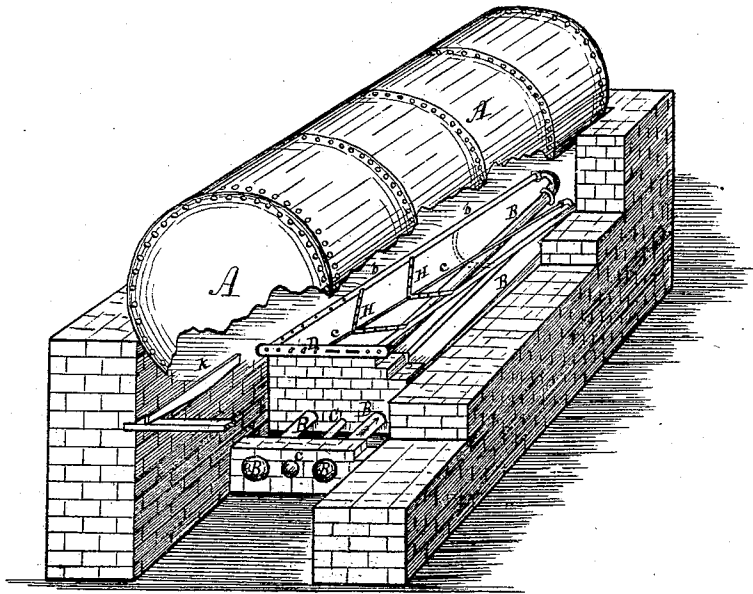


B. H. DEAR.

Improvement in Furnace Smoke-Consumers.

No. 128,213.

Patented June 25, 1872.



Witnesses.

N. Lipp.

Mr. E. Orwig.

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UNITED STATES PATENT OFFICE.

BARTON H. DEAR, OF DES MOINES, IOWA.

IMPROVEMENT IN FURNACE SMOKE-CONSUMERS.

Specification forming part of Letters Patent No. 128,213, dated June 25, 1872; antedated June 15, 1872.

SPECIFICATION.

I, BARTON H. DEAR, of Des Moines, in the county of Polk and State of Iowa, have invented a Self-Operating Smoke-Consumer for Furnaces, of which the following is a specification:

My invention is a self-operating smoke-consumer for all kinds of furnaces. It consists in laying one or more conducting and distributing pipes underneath the boiler in such a manner that the pipe or pipes will conduct hot air and distribute it in the fire and smoke, and aid in the burning and consumption of all the gaseous and combustible material that would otherwise be carried off and wasted.

The drawing is a perspective view, showing three pipes passing from the front to the rear of the furnace and boiler, and then bending upward and returning forward again, as hereinafter described.

A A is the boiler, which may vary in dimensions. Part of the front and lower end is cut away to show the distributing-pipes. B B represent two conducting-pipes starting near the bottom of the wall at the rear end of the ash-chamber, under the grate-bars, and passing backward through the bridge-wall to the rear end of the furnace, where they are turned upward and forward and connected with distributing-pipes. These pipes may be four or five inches in diameter, or may vary in size as desired, and may be contracted as they approach the distributing-pipes *b b*. *b b* are the distributing-pipes returning forward. They are smaller in diameter than the conducting-pipes, and may also vary in size as desired. They are inclined upward, and at the front end they are about four inches from the bottom of the boiler. The distance from the boiler may be varied. They may be perforated or not, as desired. C C is a smaller conducting-pipe, and is placed parallel with and midway between the pipes B B. It is connected with the distributing-pipes *c c*. This pipe is designed to conduct the hot air to the distributing-pipe D, and to bring a full supply of hot air to that forward point. For this reason it is not perforated like the pipes *b b*. D is a distributing-pipe connected with the ends of the pipes *b b*, and extends across from one to the other. Its distance from the fuel and fire-grate, and also from the bottom of the boiler, may be varied. It is perforated on its top,

and from these openings the hot air escapes and mingles with the smoke and soot and gas. The air, when it first enters the conducting-pipes, is heated to a certain degree by the fire above the entrance of the pipes; but as it passes through the distributing-pipes, which are exposed to the heat of the furnace, it becomes heated to a high degree, and so rarefied that it will blow through the openings in the distributing-pipes with force, and thereby also aid combustion. The perforations may be round or slotted, running lengthwise or crosswise, as shown in the drawing. The size and number of these perforations may vary, as required, for various-sized pipes. H H represent V-shaped distributing-pipes connected with the pipes *b b*. Their points stand forward toward the furnace-fire. They are perforated like the pipe D. No smoke or soot or gas can pass over these V-shaped pipes without coming in contact with the hot air escaping from them. One or more of these may be used, and their distances from the furnace-fire and from each other may vary. The dotted lines indicate how they may be made in a curved form to perform the same function; or they may be straight. Air-chambers are provided at the front and rear ends of my distributing-pipes such as are in common use in furnaces. Movable covers or dampers may be placed over or in the ends of the conducting-pipes B B and C in such a manner that the pipes may be partly or altogether closed whenever desired.

I am aware that various modes of conducting hot air for similar purposes have been in use. I claim, however, that my manner of laying self-operating pipes underneath the boiler, as set forth, to be new and economical, and greatly advantageous.

Claim.

I claim as my invention—

A smoke-consumer for furnaces, composed of the conducting-pipes B B and C, the pipes *b b* and *c*, the distributing-pipe D, and the V-shaped pipes H H or their equivalents, applied and operated substantially as described.

BARTON H. DEAR.

Witnesses:

THOS. HATTON, Jr.,
TYLER SCOVILLE.