

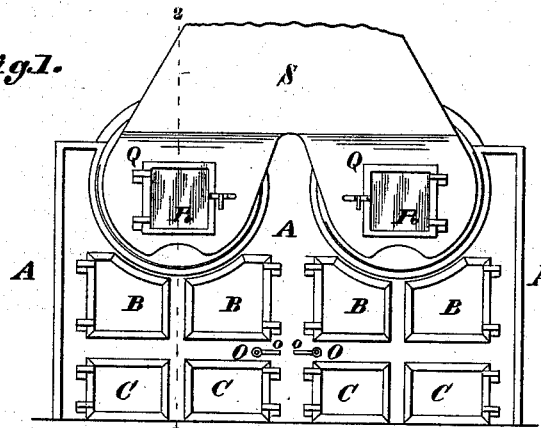
(No Model.)

H. G. WILSON.  
SMOKE CONSUMING FURNACE.

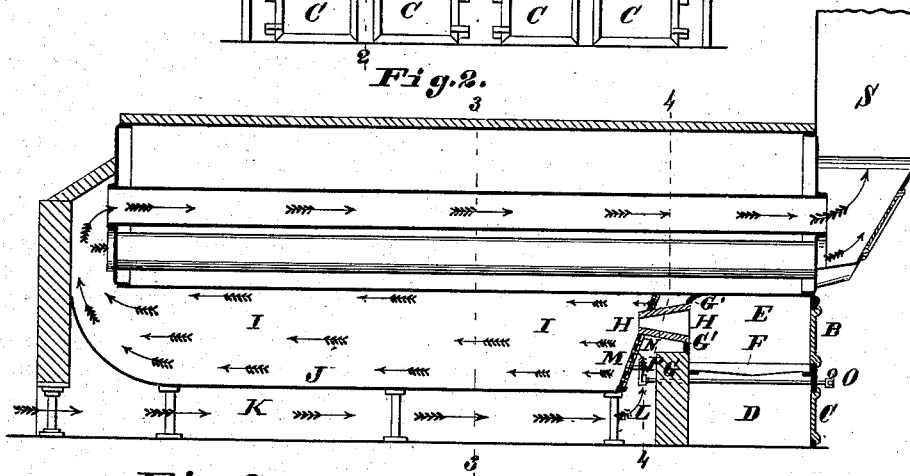
No. 263,642.

Patented Aug. 29, 1882.

*Fig. 1.*

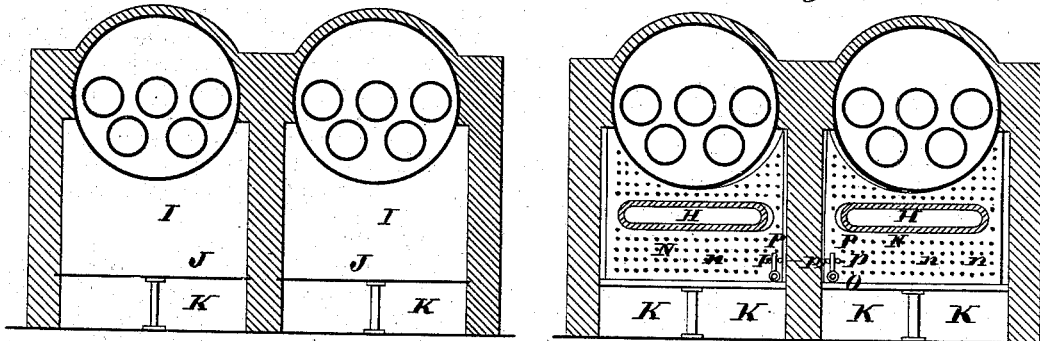


*Fig. 2.*



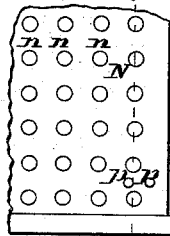
*Fig. 3.*

*Fig. 4.*

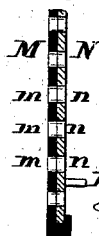


*Fig. 5.* *Fig. 6.*

Attest:  
Charles Pickles  
Geo. H. Knight.



*Fig. 6.*



Inventor:  
Hiram G. Wilson  
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# UNITED STATES PATENT OFFICE.

HIRAM G. WILSON, OF ST. LOUIS, MISSOURI.

## SMOKE-CONSUMING FURNACE.

SPECIFICATION forming part of Letters Patent No. 263,642, dated August 29, 1882.

Application filed January 21, 1882. (No model.)

*To all whom it may concern:*

Be it known that I, HIRAM G. WILSON, of St. Louis, in the State of Missouri, have invented certain new and useful Improvements in Smoke-Consuming Furnaces, of which the following is a specification, reference being had to the accompanying drawings, forming part of the same.

My invention relates to an apparatus by which heated air is supplied to the gases as they leave the fire-chamber to cause the combustion of the carbon, and thus divest the products of combustion of a material part or all of their smoke.

In the drawings, Figure 1 is a front view, representing two horizontal boilers side by side. Fig. 2 is a longitudinal section at 2 2, Fig. 1. Fig. 3 is a transverse section at 3 3, Fig. 2. Fig. 4 is a transverse section at 4 4, Fig. 2. Fig. 5 is an enlarged detail of part of the perforated air-plates separating the hot-air chamber from the combustion-chamber, and Fig. 6 is a section of same at 6 6, Fig. 5.

A is the fire-front, with fire-doors B and ash-doors C. D is the ash-pit, and E the fire-chamber. The grate-bars are shown at F and the bridge-wall at G. H is a flue or throat passing over bridge-wall G and discharging the gases from the fire-chamber into the combustion-chamber I. The size of the throat H is sufficiently reduced to cause the current of gases to pass through it with speed, and by the formation of a partial vacuum accelerate the passage of the heated air through the orifices of the metal or other plate, M. The bottom or part of the bottom of the combustion-chamber I is formed of a plate, J, of metal or some substance that will allow the ready passage of heat from the combustion-chamber to the air duct or chamber K upon the other side of the plate or division J. The duct K leads from a part of the furnace at a distance from the fire-chamber E to an air-chamber, L, which forms a continuation of the duct K between the bridge-wall G G' and the perforated plates M N, which separate the air-chamber from the combustion-chamber. These plates have numerous small holes, *m* and *n*, through which the

air passes from the hot-air chamber to the combustion-chamber. The damper-plate N is made movable to enable the partial or entire closing of the orifices *m*, with which the orifices *n* are in conjunction or line in a certain position of the plate N.

The plate N may be operated by any suitable mechanism. I show a damper-rod, O, having a finger, P, engaging studs *p* on the plate N, so that as the rod O is turned the damper-plate N is slipped along the plate M. The damper-rod O is turned by a handle, *o*, or other means. In the front wall are doors Q, with glass or other transparent panes, R, to enable the observation of the products of combustion when entering the chimney S, to determine the efficiency of operation of the smoke-consuming device.

I have shown two horizontal boilers side by side. The improvement is applicable to a single boiler, or to any number of them, whether they are horizontal, vertical, or inclined, the essential features of the invention being applicable to boilers in any position. (The air entering a flue at a distance from the fire-chamber, and being heated by a conducting-plate separating the air-flue from the duct through which the products of combustion escape, and the air being conducted to a chamber in proximity to the fire-chamber from which it escapes into the flue leading from the fire-chamber.) Where more than one boiler is used the air-duct K may be extended in a single chamber under all of them.

I claim as my invention—

The combination of bridge-wall G, fire-chamber E, in front of the bridge-wall, combustion-chamber I, in rear of the bridge-wall, perforated plate M, conducting-plate J, beneath the combustion-chamber, air-duct K, beneath conducting-plate, and hot-air chamber L, between the bridge-wall and perforated plate, and forming a continuation of the air-duct K, as set forth.

HIRAM G. WILSON.

Witnesses:

SAML. KNIGHT,  
GEO. H. KNIGHT.