

No. 640,796.

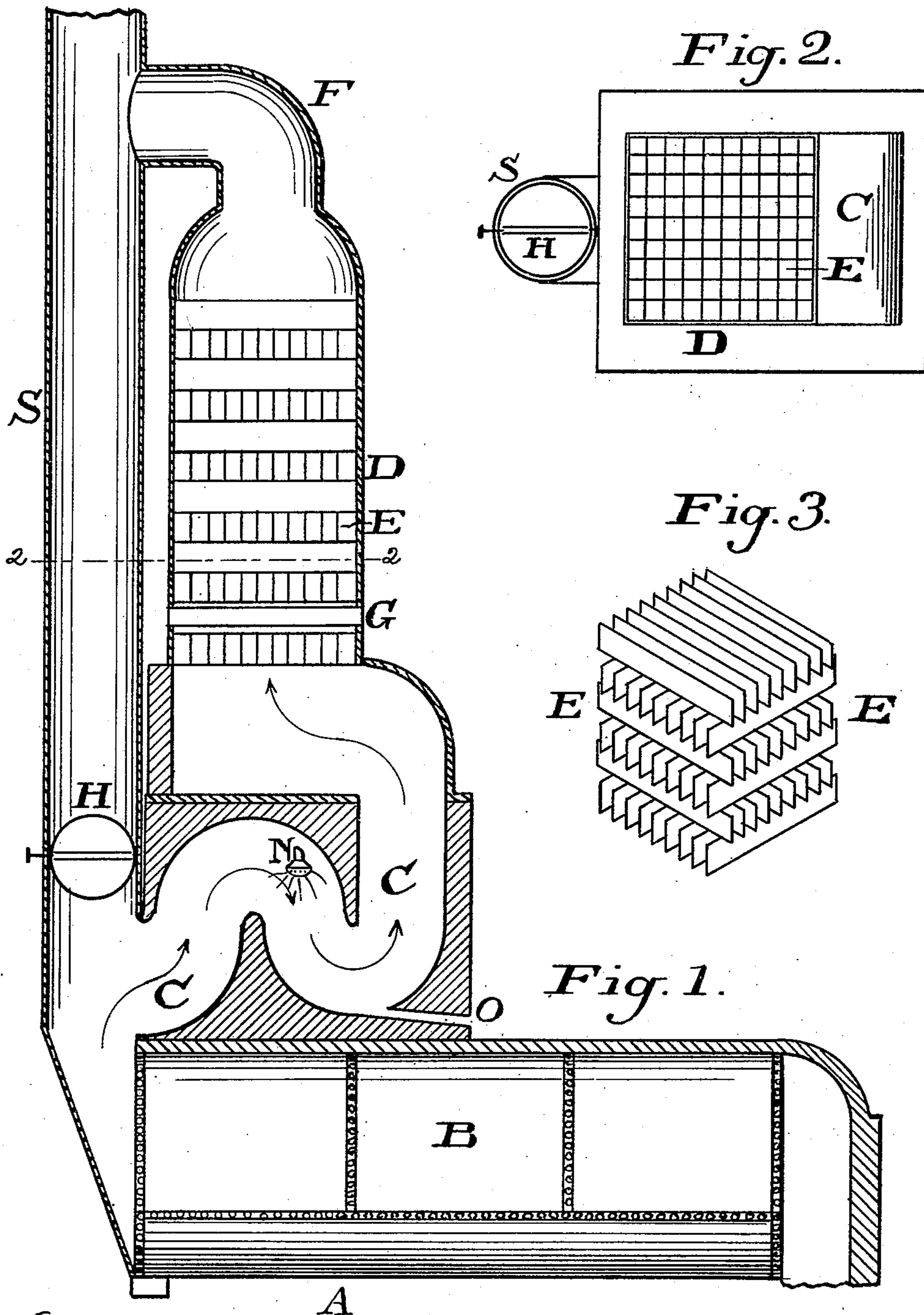
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W. NEUHS.

SMOKE PREVENTING DEVICE FOR FURNACES.

(Application filed June 10, 1899.)

(No Model.)



Witnesses,  
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# UNITED STATES PATENT OFFICE.

WERNER NEUHS, OF CLEVELAND, OHIO.

## SMOKE-PREVENTING DEVICE FOR FURNACES.

SPECIFICATION forming part of Letters Patent No. 640,796, dated January 9, 1900.

Application filed June 10, 1899. Serial No. 720,039. (No model.)

*To all whom it may concern:*

Be it known that I, WERNER NEUHS, a citizen of the United States of America, and a resident of Cleveland, county of Cuyahoga, and State of Ohio, have invented certain new and useful Improvements in Smoke-Preventing Devices for Furnaces, of which the following is a specification.

This invention relates to furnaces for steam-boilers and other purposes; and it consists in the combination and arrangement of a device in connection with the smoke-stack for collecting and preventing the escape of smoke.

The device is constructed and adapted to operate substantially in the manner herein-after described, and pointed out in the claim.

The accompanying drawings illustrate the invention, in which—

Figure 1 is a vertical section of the device as seen in connection with a smoke-stack and a boiler. Fig. 2 is a cross-section on line 2 2 on Fig. 1. Fig. 3 is a perspective view representing the manner of laying up the metal strips to form the checker-work.

A represents a portion of a furnace, and B is a boiler set over the same, which may be of any of the well-known and commonly-used forms and construction. S is a smoke-stack connected with them in the ordinary manner. Contiguous to the stack and over the boiler or in any other suitable and convenient location therewith I provide and attach my device.

C is an S-shaped flue connected with the base of the stack at its connection with the boiler. This flue is made of iron and masonry, strong and substantial for supporting the structure above it.

D is a stack preferably made square in form and of iron or brick and is erected on the top of the said flue C and in open communication therewith.

E are narrow strips of metal built or fixed crosswise within the stack D, edge upward and at short distances apart and in alternate cross-sections, so as to form checkered open-work upwardly, as seen in Fig. 2. In the lower part of said stack D are provided cross

tubes or pipes G, open only at their ends and to the open air. They are intended for cooling the smoke that passes between them. The top of the stack D is connected by an elbow F to the stack S.

H is a damper in the stack S just above its connection with the flue C.

N is a spray-nozzle on a water-pipe located in the upper bend of the flue C, from which water is sprayed into the smoke as it enters the flue.

O is an outlet at the bottom of the curve of flue C for the discharge of the liquid.

The operation of this device is as follows: The damper H being closed for shutting off the direct draft into the stack S, the smoke and gases pass into the curved flue C, as indicated by the arrows, and come in contact with the spray, which becomes vaporized and mingles therewith, and as it still rises and comes in contact with the tubes and checkered work E, the wet smoke is cooled and the vapor condensed and will stick and be collected thereon, and as the vapor condenses into liquid it falls to the bottom of curve C and being loaded with the carbon runs out through the outlet O.

Having described my invention, what I claim is—

The combination with the furnace A, boiler B and stack S provided with damper H, of the curved or S-shaped flue C, standing on or near the boiler, and in open communication with the stack, and having the outlet O, the stack D having the open cross-tubes G, and the cross-strips E forming the checkered open-work within, the top of the stack D also in communication with the stack S; a water-sprayer N in the flue C, all constructed to operate substantially as and for the purpose set forth.

Signed by me at Cleveland, Ohio, this 17th day of December, 1898.

WERNER NEUHS.

Witnesses:

GEO. W. TIBBITTS,  
J. THOMAS.