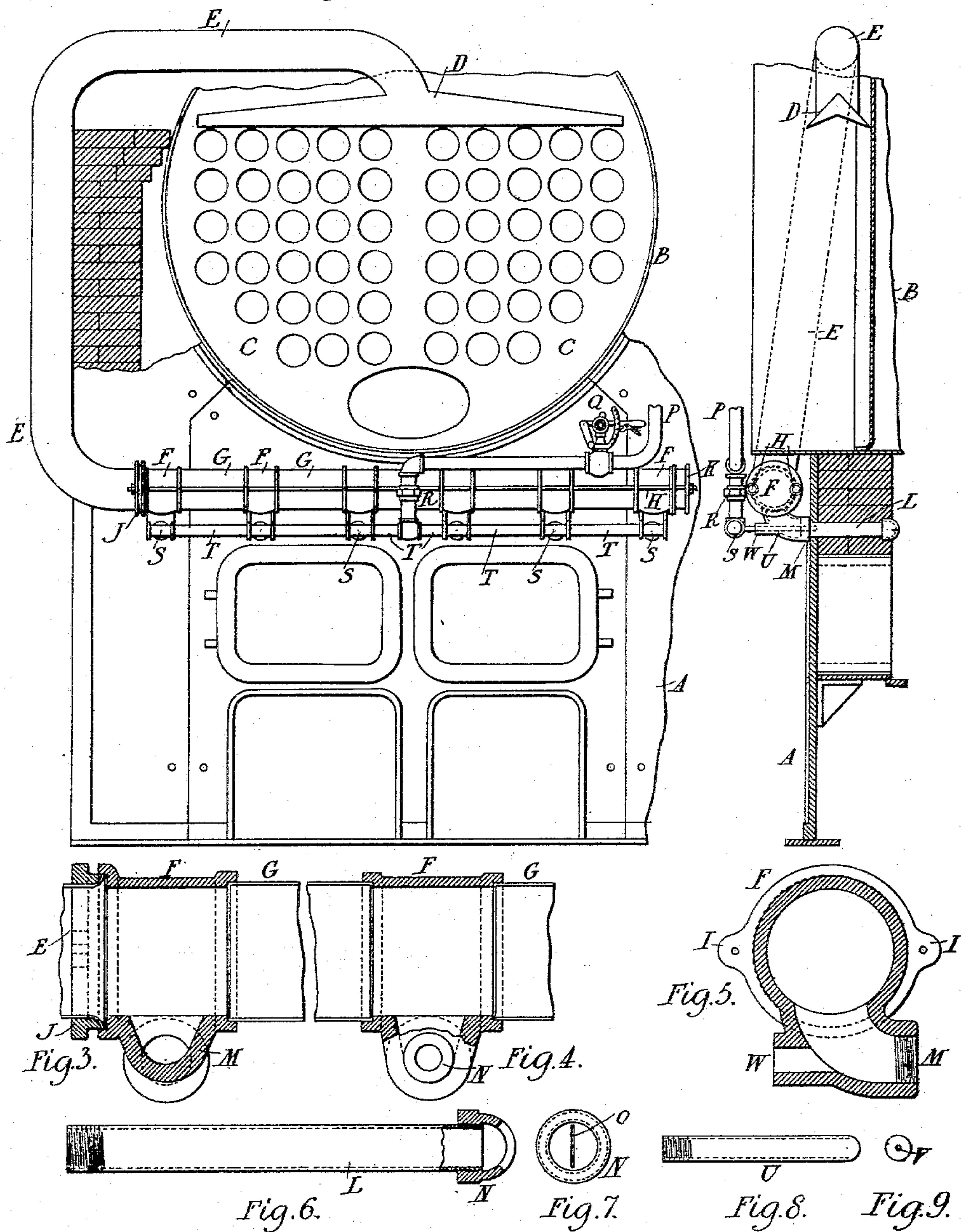


P. GEISER.  
SMOKE CONSUMER.

Patented Feb. 5, 1895.

*Fig. 2.*



Inventor  
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By *F. L. Brown* Attorney



# UNITED STATES PATENT OFFICE.

PETER GEISER, OF LOUISVILLE, KENTUCKY.

## SMOKE-CONSUMER.

SPECIFICATION forming part of Letters Patent No. 533,799, dated February 5, 1895.

Application filed May 24, 1894. Serial No. 512,367. (No model.)

*To all whom it may concern:*

Be it known that I, PETER GEISER, a citizen of the United States, residing at Louisville, in the county of Jefferson and State of Kentucky, have invented certain new and useful Improvements in Smoke-Consumers; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to smoke consumers and consists generally of a steam manifold and of an air manifold composed of sections, which are readily joined together, so that the manifolds can be made of any desired length.

An important feature of my invention is that the smoke is retained in the furnace by the use of a current of heated air above it, until it is consumed. This use of heated air is, I believe, new and does not lower the temperature of the furnace as much as does cold air, which is ordinarily used in smoke consumers.

In the drawings Figure 1 is a vertical front view of a fire front and boiler showing the smoke consumer. Fig. 2 is a vertical side view of the same. Fig. 3 is a vertical longitudinal section through the casting F on the extreme left side of the air manifold. Fig. 4 is a like section of the other castings F. Fig. 5 is a vertical cross section through the castings F. Fig. 6 is an air tube and Fig. 7 is an end view of the same showing the slit O in its tip N. Fig. 8 is a steam jet pipe and Fig. 9 is an end view of the same showing the opening V for the escape of steam.

A is a fire front.

B is a boiler, having the flues C through which the unconsumed smoke and hot air pass to the stack.

D is a funnel so placed as to collect the unconsumed smoke and hot air before they reach the stack. The funnel may be of any suitable shape. In the drawings it is oblong.

E is a connecting pipe, which leads the unconsumed smoke and hot air from the funnel to the air manifold. This manifold consists of a series of castings F connected by tubes G passing into recesses in the castings as shown in Figs. 3 and 4. The air manifold is bolted together by the tie rods H passing through lugs I of the castings G. The pipe E

is flanged at the lower end, and is connected to the casting F, at the left side of the air manifold, by the gland J, as shown in Fig. 3. The casting F on the right side of the air manifold is closed by the cap K.

L is an air tube which is secured to the opening M of each of the castings G. It is provided with a tip N having a slit O, which is horizontal when in position. This slit is narrow so as to spread the hot air in a thin sheet.

P is a steam pipe connected with the upper part of the boiler, where the steam is dry. It is provided with any suitable valve Q of quick action, and is connected with the steam manifold by the union R. The steam manifold consists of T's S, connected together by pipes T, so as to be opposite the castings F of the air manifold. Each T S of the steam manifold is provided with a small jet pipe U, having an opening V at its tip so as to spray the steam. The jet pipe U is of such size that it easily passes into the opening W of the casting F. The steam manifold is closed at both ends, and may also be made of steam pipe, and all but the central T omitted, and the steam jet pipes screwed directly into tapped holes in such steam pipe at the proper intervals.

In Figs. 1 and 2 the connecting pipe E and the air manifold are placed outside of the masonry and fire front of the furnace. They are put in this position when the smoke consumer is applied to furnaces already constructed, but I prefer to place them within the walls and fire front of furnaces under construction, so as to prevent the radiation of heat. The steam manifold should be placed outside of the fire front, which should be pierced with holes for the steam jet pipes U to pass through. This allows the steam manifold to be readily detached, and the steam jet pipes U withdrawn from the castings F of the air manifold, by unscrewing the union R, so that the openings V can be cleared when necessary.

In use when the valve Q is opened, the steam passes through the openings V of the jet pipes U in a spray and forces the hot air from the air tubes L and the connecting pipe E into the furnace, producing a vacuum in the connecting pipe E, which draws into the



funnel D the unconsumed smoke and hot air passing from the flues C of the boiler. The air tubes L are slightly below the level of the bridge wall of the furnace. The current of  
5 hot air passing from them across the upper part of the furnace retains the smoke above the fire until it is consumed by the flames.

Among the advantages of my invention are that about ninety per cent. of the smoke is  
10 consumed and there is a saving of ten per cent. of the fuel by the use of heated air.

Having fully described my invention, what I claim as new, and desire to secure by Letters  
15 Patent, is—

1. In a smoke consumer for boiler furnaces, the combination with a funnel located above and adjacent to the flues, an air manifold connected to said funnel by a pipe, and com-  
20 posed of a series of castings and connecting tubes, said castings having openings M, W, air tubes leading from the openings M and

having slitted tips, a steam manifold composed of T's and connecting tubes, and steam tubes leading from the T's into the air manifold through openings W, all substantially as  
25 and for the purpose set forth.

2. The combination with an air manifold composed of a series of castings and connecting tubes held together by the rods, said castings each having openings M, W, air tubes  
30 leading from the openings M and having slitted tips, a steam manifold composed of T's and connecting tubes, and steam tubes leading from the T's into the air manifold through openings W, all substantially as and for the  
35 purpose set forth.

In testimony whereof I affix my signature in presence of two witnesses.

PETER GEISER.

Witnesses:

OSCAR R. SULZER,

JAMES W. BEATTIE.