

No. 660,761.

Patented Oct. 30, 1900.

E. SEYFARTH.
BOILER FLUE.

(Application filed Feb. 16, 1900.)

(No Model.)

Fig. 1.

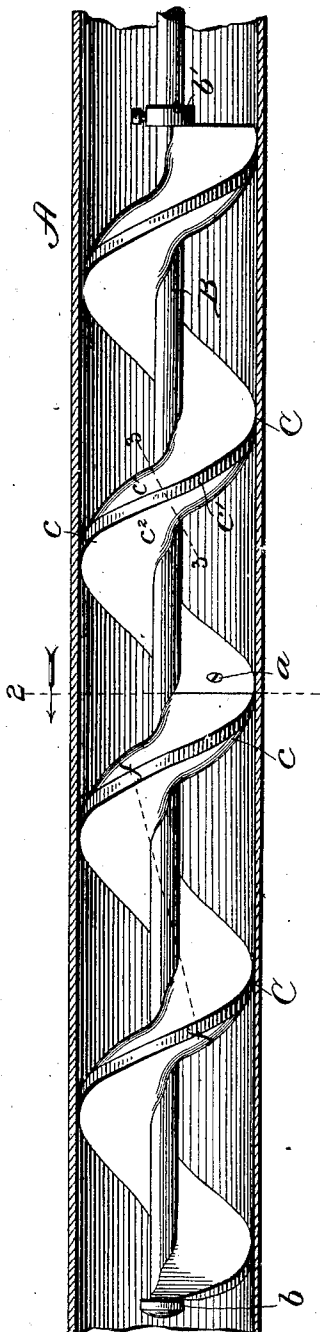


Fig. 3.

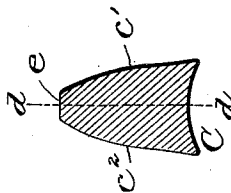
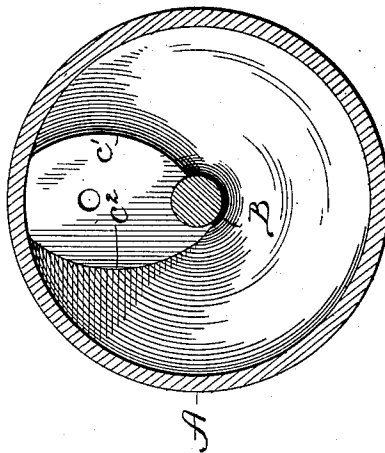


Fig. 2.



Witnesses:

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BOILER-FLUE.

SPECIFICATION forming part of Letters Patent No. 660,761, dated October 30, 1900.

Application filed February 16, 1900. Serial No. 5,480. (No model.)

To all whom it may concern:

Be it known that I, EDWARD SEYFARTH, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Boiler-Flues, of which the following is a specification.

My invention consists in an improvement in boiler-flues; and my object is to provide a construction wherein the products of combustion are caused more effectively to follow a spiral channel and keep in close contact with the interior surface of the flue till the heat has been utilized to the highest possible extent.

I accomplish my purpose preferably by the employment of the improved spiral-like device shown in the accompanying drawings, in which—

Figure 1 is a broken longitudinal section showing the spiral in place in a flue; Fig. 2, an enlarged transverse section at line 2 of Fig. 1, and Fig. 3 a diagonal section at line 3 of Fig. 1.

A represents a fragment of a flue, B a central longitudinal core or rod of relatively small cross-section, and C spiral-form sections formed with central grooves to receive said rod, said sections being preferably of cast metal.

The drawings show two of the sections C connected by a screw *a* and confined on the rod by a head *b* and an adjustable collar *b'*; but it will be understood that a rod of any length and any number of sections desired may be employed and that the sections may be disposed on the rod in any desired location, according to the requirements of the furnace.

The spiral crests *c* of the sections C contact closely with the inner surface of the flue, and the sections fit closely on the rod B. Thus all the products of combustion are compelled to follow a distinct spiral course. The surfaces of the sections C, which direct the gases, (indicated by *c'* and *c''*), converge from a somewhat-widened base to meet the crest-surface *c*. These surfaces are inclined to the rod, and, as will be seen from Fig. 3, a sec-

tion perpendicular to the course of the spiral sections C gives side marginal lines which are inclined to a line drawn perpendicular to the rod through the center of the section. Such a perpendicular line is indicated by the line *d d*. The area of the cross-section of the spiral section is, as indicated in Fig. 3, only great enough to secure the desired slope for the surfaces *c' c''*. The result of the construction described is to cause the gases to crowd to the inner surface of the flue and also to constantly mix or churn the gases, so as to give a uniform temperature. In this connection the inclined surface of the spiral section on the side toward the advancing gases serves particularly to cause an impingement of the gases against the interior of the flue.

As will appear from Fig. 1, the distance between like phases of the spiral section is sufficient to cause the cross-section of the spiral channel at any point—as, for instance, at the line *f f*—to equal approximately the cross-section of the flue. Such cross-section may be increased somewhat over the cross-section of the flue, but should not fall materially below the latter. It is to be observed that the result of this last-mentioned provision is to prevent objectionable retardation of the gases, while the advantage of the increased length of channel is retained.

What I claim as new, and desire to secure by Letters Patent, is—

The combination with a boiler-flue, of a device for forming a spiral channel for the gases, comprising a central rod of relatively small diameter and spiral sections thereon contacting at their spiral crests with the interior surface of the flue and provided with deflecting-surfaces which slope transversely of the spiral in a direction to widen the sinusous channel as the inner surface of the flue is approached, substantially as and for the purpose set forth.

EDWARD SEYFARTH.

In presence of—

D. W. LEE,
A. D. BACCI.