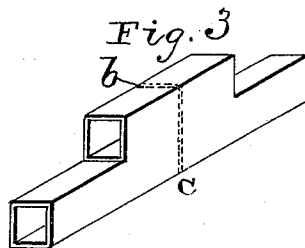
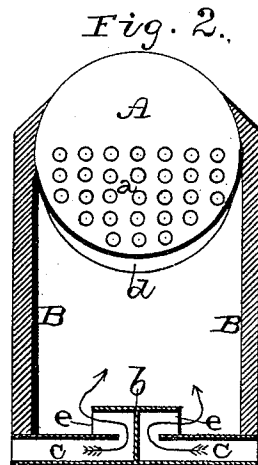
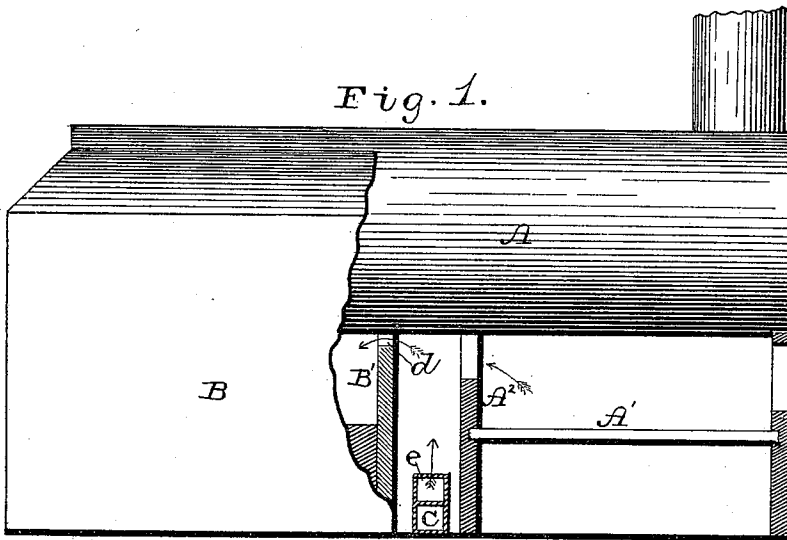


(No Model.)

B. E. COLE.
SMOKE CONSUMER.

No. 583,844.

Patented June 1, 1897.



WITNESSES:

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UNITED STATES PATENT OFFICE.

BYRON E. COLE, OF BATTLE CREEK, MICHIGAN.

SMOKE-CONSUMER.

SPECIFICATION forming part of Letters Patent No. 583,844, dated June 1, 1897.

Application filed December 17, 1896. Serial No. 616,006. (No model.)

To all whom it may concern:

Be it known that I, BYRON E. COLE, a citizen of the United States, residing at Battle Creek, in the county of Calhoun and State of Michigan, have invented certain new and useful Improvements in Smoke-Consumers; and I do 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, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

This invention relates to that class of smoke-consumers in which combustion of the gas is reinforced at the rearmost extremity of the fire grate and chamber for the purpose of supplying oxygen of the atmosphere at the point where the primary supply is exhausted; and I accomplish this desideratum by the simple and effective construction and arrangement of the several parts, as hereinafter set forth, illustrated, and claimed.

In the drawings forming part of this specification the letters of reference employed designate like parts in each of the views.

Referring to the latter, Figure 1 represents an elevation of a steam-boiler of ordinary form and setting with portions of its walls removed and broken away for the purpose of better showing the several parts which comprise the essential features of my invention. Fig. 2 is a transverse sectional view, and Fig. 3 is a perspective view of the reinforcing flue or air-duct detached.

A represents the boiler, provided with flues *a*, and B represents the brick setting or fire-chamber, upon which the boiler and fire-grate A' find their well-known closure and support.

C represents air-duct or conduit for conveying the reinforcing-supply from outside of the wall, through and upward via the exits *e* thereof, inside the wall, and between the bridge-wall A² and the transverse wall B', on which the boiler is supported. A partition is placed in the air-duct, and the exits therefrom are turned outwardly away from each other, as shown, so that the inflowing currents of air will be directed in opposite directions and thereby broken up and made to thoroughly commingle with the products of combustion and form a perfect combustion. A single

opening through the pipe will not answer for this purpose, and hence the air-duct is divided practically into two pipes, and the inflowing currents are discharged away from each other, so as to cause the most thorough commingling of the air with the gases. The air-duct C is preferably located closely to the wall B, as represented in Fig. 1, and its inner openings *e* (one on each side of the fire-box center) are separated by the vertical partition *b*. Where it is not convenient to draw the reinforcing air-current from both sides of the furnace, a single conduit having a plurality of inner exit-openings may be used, as is evident.

Located directly above the reinforcing-duct C, or nearly so, and between the under side of the bottom of the boiler and the top of the transverse wall B' is the crescent-shaped restricted flue *d*, the office of which is to check the too rapid progress of the products of combustion at this point as an aid to the formation of circular currents or eddies of air and the said products of combustion, whereby the impinging currents of air and gases become thoroughly intermingled and combustion reinforced and the smoke thus consumed by freshly incorporated oxygen at this point.

The construction, arrangement, mode of operation, and essential features of this novel invention will be well understood by those skilled in the art to which the same appertains by the mere careful scrutiny of the drawings.

I am aware that many methods looking in this direction have been proposed and tried with indifferent success to reinforce by jets of steam, &c., at the rear of the fire-chamber; but in none of these, so far as known and used, has anything approaching the utility and simplicity of my present novel invention been subjected to successful test.

Having thus clearly illustrated and described my invention, whereby those skilled in the art may construct and use the same, what I claim, and desire to secure by Letters Patent of the United States, is--

1. In a smoke-consumer, the fire-chamber, the bridge-wall, provided with a restricted flue or passage-way for the passage of the products of combustion, directly underneath and in contact with the under side of the boiler, and the transverse wall B', combined

with an air-duct, placed between the two walls, and provided with a partition, and openings which extend in opposite directions and through which the fresh air is admitted
5 to mingle with the gases, substantially as shown.

2. In a smoke-consumer, the fire-chamber, the bridge-wall, having a restricted flue or passage-way for the passage of the products
10 of combustion, and a rear wall, B' combined with the air-duct which is located in the bottom of the chamber, formed between the two walls, and which air-duct is opened at both

ends, and provided with a partition at or near its center, and openings extending in oppo- 15 site directions at each side of the partition for the admission of fresh air to mingle with the products of combustion, substantially as described.

In testimony whereof I affix my signature 20 in presence of two witnesses.

BYRON E. COLE.

Witnesses:

A. W. ATHERTON,
W. D. CAMPBELL.