

(No Model.)

W. E. COLE.
SMOKE CONSUMER.

No. 570,001.

Patented Oct. 27, 1896.

Fig. 1.

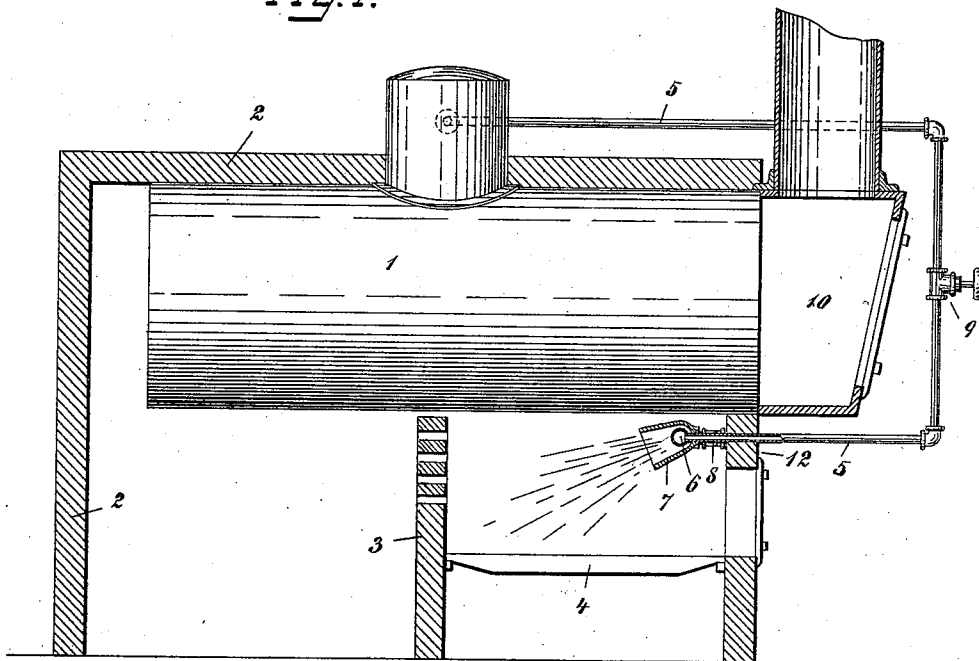


Fig. 2.

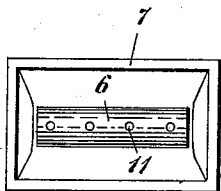
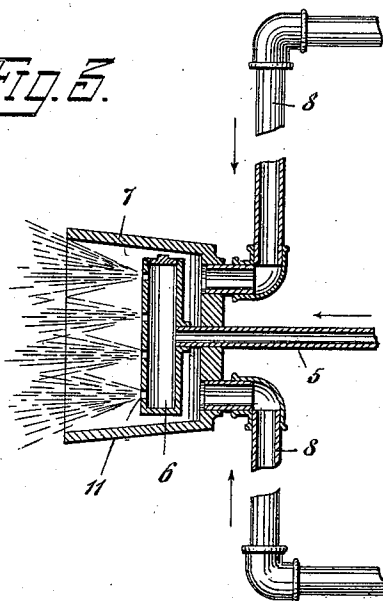


Fig. 3.



WITNESSES:

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SMOKE-CONSUMER.

SPECIFICATION forming part of Letters Patent No. 570,001, dated October 27, 1896.

Application filed March 6, 1896. Serial No. 582,162. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM E. COLE, a citizen of the United States of America, and a resident of Atlanta, in the county of Fulton and State of Georgia, have made certain new and useful Improvements in Smoke-Consuming and Fuel-Economizing; 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, reference being had to the accompanying drawings, and to figures of reference marked thereon, which form a part of this specification.

This invention relates to devices for causing a complete consumption of the fuel by means of a steam-forced hot-air draft, the details all of which will be hereinafter specified.

In the accompanying drawings, Figure 1 is a longitudinal section of the boiler, showing this device in position; Fig. 2, showing the front end of the air-receiver and steam-chest; Fig. 3, showing top view in section of air-receiver steam-chest with steam and hot-air connecting pipes.

In the figures like reference-numerals are uniformly employed to designate the corresponding elements of construction.

1 is the boiler setting in position, as shown in Fig. 1. Close underneath the boiler near its forward end is shown the air-receiver 7, which is preferably made funnel shape with square or oblong mouth six inches deep, four inches by seven inches at forward open end. Deep into this air-receiver, leaving about one inch between, the steam-chest 6 is located, as is shown in Fig. 3. Into the closed or rear end of air-receiver 7 openings are made for the securing, with open passage, the hot-air pipes 8. An opening is also made in said rear end for the passage of the steam-pipe 5, which is secured with open passage into the steam-chest 6. Two passages are made through the furnace-front 12, near each corner of the furnace, for admission of the hot-air pipes 8. Immediately after entering the inside corners of the furnace they elbow and point to the air-receiver, elbow again, and attach to rear end of said receiver, thus making an air connection with said receiver.

I do not confine myself strictly to introduc-

ing the air-pipes through the front and using elbows. It is just as well for them to enter through the side walls of the furnace and point to the air-receiver and attach to the side of air-receiver, with open passages near the rear end. The object desired is to intensely heat the air to a combustible point by the time it reaches the air-receiver for distribution into the flames arising from the fuel burning in the furnace. Neither do I confine myself to two air-pipes. The size can be increased and one instead of two used.

In Figs. 2 and 3 the small openings 11, that are made in the steam-chest 6 for the outlet of steam, are about one-sixteenth of an inch in diameter. The two outside openings are drilled at an angle, so as to point toward the corners of the furnace (bridge-wall corners) and to point slightly down. The other two are drilled at a less angle, so as to equally divide the spray of steam over the burning fuel.

A more perfect combustion can be had by making a perforated or flued bridge-wall, as is shown in vertical section 3 in Fig. 1. In building the bridge-wall, according to the depth of the furnace, let the first two or three layers of brick be laid close as brick are usually laid. Then figure the area of the flues in the boiler. Then draw the brick apart, so as to leave openings two and a half or three inches. Make as many such openings as will give you one-sixth to one-eighth less area in the bridge-wall openings than in the flues. The draft of the smoke-stack determines the difference between one-sixth and one-eighth of area in bridge-wall openings—the stronger the draft the less openings in the bridge-wall.

I call attention to the plug 13 in the end of the steam-chest. Should pipe-scale or dirt close the openings 11, disconnect the steam-pipe on the outside of the furnace and push the steam-chest out of the air-receiver, take plug out, and clean the steam-chest and openings.

It is plainly seen by those versed in mechanics, by taking the above description and the accompanying drawings, that the air-pipes being after their entrance into the furnace exposed to the heat, that by the time the air reaches the air-receiver that it is heated to a

combustible point; also that the steam-chest being placed back deep into the mouth of the air-receiver, with its steam-pipe connection, that when steam is turned on by valve 9 that
5 a uniform spray of steam is spread over the burning fuel, and as the steam forces itself out from the mouth of the air-receiver that it creates a strong suction, which draws the
10 the heated pipes 8 into the receiver, where it as swiftly follows the steam into the rising smoke and gas, causing a perfect combustion to take place.

I am aware that there are other devices that
15 introduce steam and air into the furnace, but know of none that surround a steam-chest or steam-head in such a manner as to produce a

strong suction of air from the outside through fire-heated pipes, as I do.

Having thus described my invention, what 20 I claim as new, and desire to secure by Letters Patent of the United States, is—

In a smoke-consumer, a casting with its forward end open, openings made in its back end for the securing of air-induction pipe or 25 pipes, another opening made in its rear end for the passage of a steam-pipe, a steam-chest located inside the mouth of said casting, uniting with said steam-pipe substantially as and for the purpose specified.

WILLIAM E. COLE.

Witnesses:

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