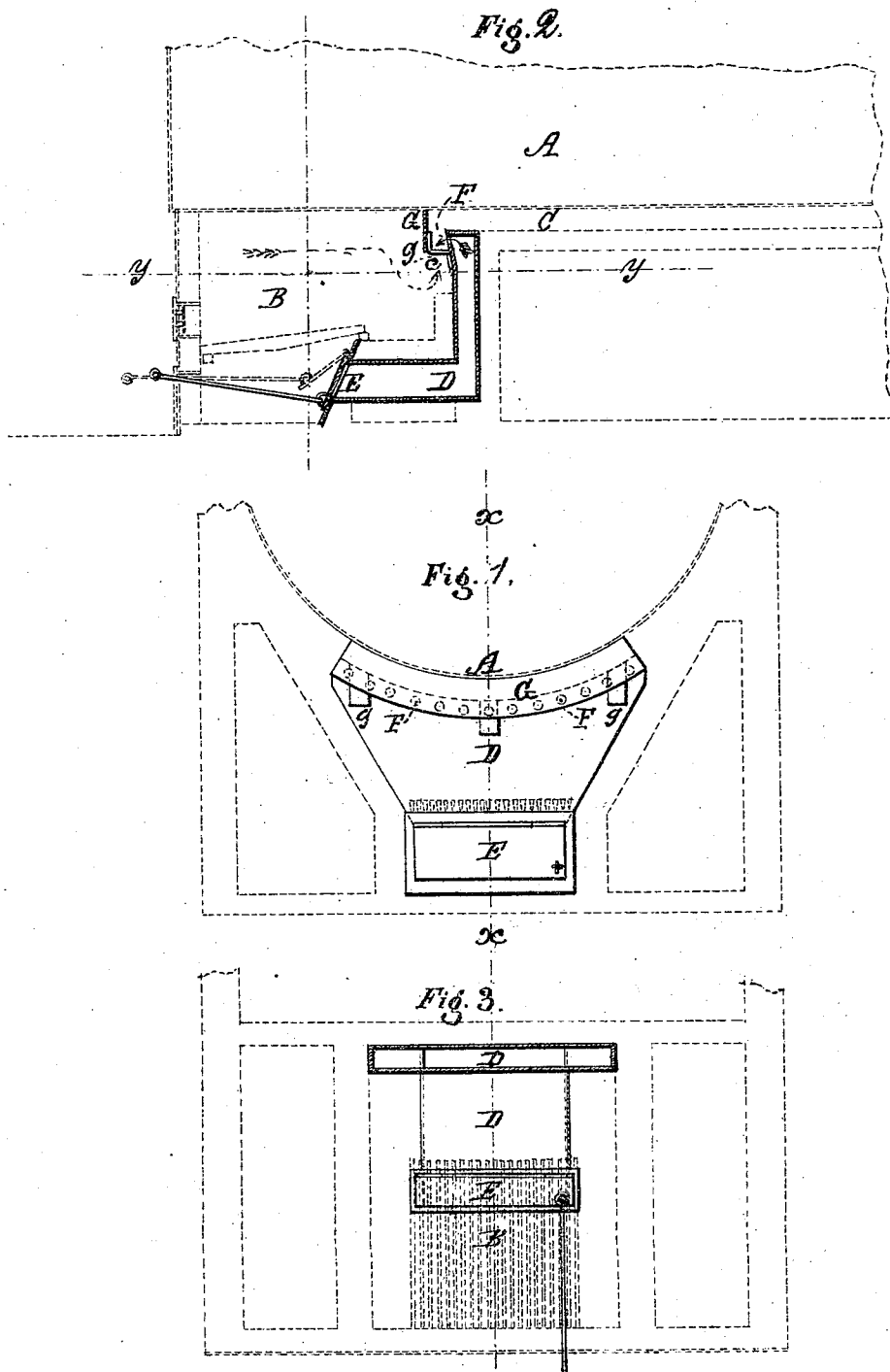


WILLIAM C. SMITH.

Improvement in Boiler Furnaces.

No. 123,427.

Patented Feb. 6, 1872.



Witnesses: *Arthur Keill* }
Charles Kelley } Inventor: *William C. Smith*

UNITED STATES PATENT OFFICE.

WILLIAM C. SMITH, OF NEW BRUNSWICK, NEW JERSEY.

IMPROVEMENT IN BOILER-FURNACES.

Specification forming part of Letters Patent No. 123,427, dated February 6, 1872.

Specification describing certain Improvements in Smoke and Gas Consuming Apparatus for boiler-furnace or other heating device, invented by WILLIAM C. SMITH, of New Brunswick, in the county of Middlesex and State of New Jersey.

The object of my invention is to consume the smoke and gas thrown off from the fire in the furnace of a boiler by oxygenating the caloric current in its passage from the furnace, which chemical change is effected by means of a simple device, composed of an air-pipe or passage having a refractor attached, which discharges a volume of fresh air against said caloric current. The nature of my invention consists in the construction and arrangement of an air-chamber or air-passage so as to extend from below the fire-grate up in rear of the furnace and nearly to the boiler, leaving a space between the device and the boiler for passage of the products of combustion; the same being provided with a door or air-inlet opening below the furnace and apertures of discharge at its top, said air-chamber or smoke-consumer having a refractor attached thereto, whereby the air is thrown against the caloric current from the furnace, and the smoke and gas consumed by additional combustion, as I will further explain by reference to the accompanying drawing, in which—

Figure 1 is a front elevation of my invention, the setting, grate, and boiler being represented in dotted lines; Fig. 2, a longitudinal section on line *xx* of Fig. 1; and Fig. 2, a hor-

izontal section taken above the fire-grate on line *yy* of Fig. 2.

In the said drawing, A indicates the boiler, B the furnace, and C the furnace-flue. D is the smoke and gas consumer, extending from below the furnace B up to the furnace-flue C, the consumer being provided with an air-inlet opening or door, E, air-discharging apertures F F, &c., near its top, and a lip or refractor, G, which abuts against the boiler, and, being attached to the upper portion of the consumer by feet *g g*, forms the mouth of the flue C; the object of the refractor G being to divert the caloric current from a direct course downward and upward to the top of the consumer, where the air, superheated in its passage through the consumer, is thrown against the caloric current, partially throwing the current back on the fire for further combustion, and causing final combustion of smoke and gas at the mouth *c* of the flue C by means of the oxygen discharged from the consumer at this point.

I claim—

The smoke-condenser D, with refractor G attached thereto in front of air-discharging openings F, all constructed substantially as and for the purposes set forth.

In testimony whereof I have hereunto set my signature this 25th day of October, 1871.

WILLIAM C. SMITH.

Witnesses:

ARTHUR NEILL,
CHARLES J. KELLEY.