

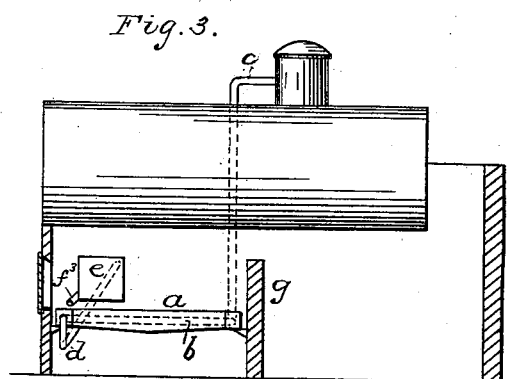
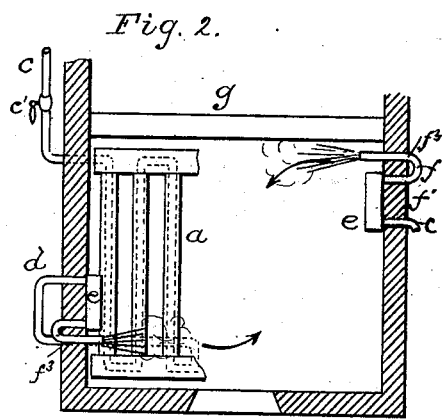
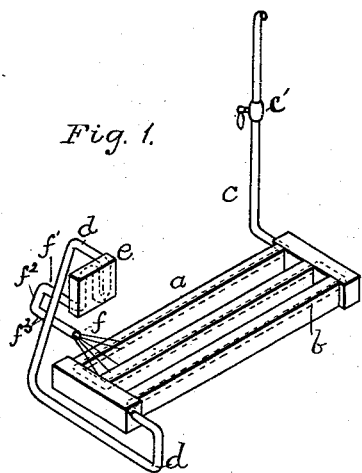
(No Model.)

S. PARKER.

SMOKE CONSUMING APPARATUS.

No. 260,894.

Patented July 11, 1882.



Witnesses:

Julius
Orville Rorabaugh

Inventor:

Sidney Parker
By W. Zimmerman
att.

UNITED STATES PATENT OFFICE.

SIDNEY PARKER, OF CHICAGO, ILLINOIS, ASSIGNOR TO ABNER W. MORRILL AND F. S. MORRILL, OF WATERLOO, AND GEORGE H. WATSON, OF ACKLEY, IOWA.

SMOKE-CONSUMING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 260,894, dated July 11, 1882.

Application filed April 3, 1882. (No model.)

To all whom it may concern:

Be it known that I, SIDNEY PARKER, of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Smoke-Consuming Apparatus for Steam-Boilers; and I hereby declare the following to be a full, clear, and exact description thereof, which will enable others skilled in the art thereto relating to make and use the same, reference being had to the accompanying drawings, forming a part hereof, and in which—

Figure 1 represents a perspective view of a section of grate-bars, showing the pipe connecting to the steam-dome at one end, and superheater at the other end thereof, and the jet or blast. Fig. 2 represents a plan view of a furnace, showing the apparatus in place; and Fig. 3 is a side view of a boiler and furnace, showing the arrangement of the apparatus, the near wall and superheater being removed.

Like letters of reference indicate like parts.

In the drawings, *a* represents a section of grate-bars, which are preferably constructed as shown, consisting of two end pieces connected by three longitudinal bars, provided with a tubular opening, *b*, starting from the steam-pipe *c*, through which the steam passes forward, thence across in the head-piece to the next bar, thence back through it and the rear end piece to the third grate-bar, and through the forward end piece out into the pipe *d*, passed under the grate-bars and out through an opening in the side wall, and then up and returned through the wall into a superheater, *e*, which consists of an iron box provided with tubular passages, (shown dotted,) so as to subject the steam to a large heating-surface, whereby the steam is superheated, and also at the same time given increased force as it issues from the jet *f* over the fire in the furnace. The object of passing the steam through the grate-bars before passing it into the superheater is twofold: first, to prevent them from burning, and, second, at the same time make use of the heat to superheat the steam in

part before it enters into the apparatus *e*. The jet *f* is taken from the rear side of the superheater *e* by a pipe, *f'*, passing outward through the wall, where it is connected to a curve, *f''*, from which a return-piece, *f'''*, or pipe parallel to the first, again projects through the wall into the furnace. The end of said pipe is provided with a jet, *f*, in the form of a horizontal slot, from which the steam issues in a broad jet over the fire and, as shown, in one corner of the furnace. The object of passing the pipes *d* and *f'* and *f'''* through the wall, as shown, is to protect them from the fire, and particularly so for the pipes *f'* and *f'''*, as in case the jet becomes injured it may be replaced at any moment while the apparatus is in operation.

The apparatus *e* is placed into or near one corner of the furnace, as shown, and receives steam through a pipe, *c*, and section of grate-bars, as shown. In a diagonally-opposite corner of the furnace, as shown, is placed a similar apparatus, *e*, which also receives its steam from a pipe, either independently attached to the steam-dome or branched from a main pipe, and which is supplied with steam passed through a like section of grate-bars, *a*, placed upon the same side of the furnace with its superheater *e*. Thus arranged, each section of grate-bars and its superheater works independently of the opposite one; but it is the simultaneous operation of the two jets *f* at the same time blowing across the furnace in opposite or nearly opposite directions that will cause a rotary motion of the smoke and gases as they rise before passing over the bridge-wall, and thus retain them longer over the fire and thus be consumed. The jets are shown passing through the walls at right angles to said walls, and which is preferable; but they might curve so as to point more or less toward the center of the furnace, only not so far as to cause the jets to blow against each other, and thereby prevent the rotary motion described. Noxious gases may thus, with air, be fed to the furnace and completely consumed or changed when they

are emitted from the smoke-stack. A cock, *c'*, in the steam-pipe *c* shuts off the steam from the boiler.

Having thus described my invention, what
5 I claim as new is—

1. In a smoke-consuming furnace, the pipe *c*, tubular grates *a*, bridge-wall *g*, and steam-jets *ff*, placed in diagonally-opposite corners of the furnace.

2. In combination with the superheater *e*, 10 the pipe *c*, provided with cock *c'*, tubular grate-bar section, substantially as specified, pipe *d*, and pipes *f' f' f' f'* and jet *f*, all constructed to operate substantially as specified.

SIDNEY PARKER.

Witnesses:

WM. ZIMMERMAN,
FRED. S. MORRILL.