

C. N. CHANDLER & G. DOW.
 DOWNDRAFT BOILER.
 APPLICATION FILED AUG. 5, 1908.

917,751.

Patented Apr. 13, 1909.

2 SHEETS—SHEET 1.

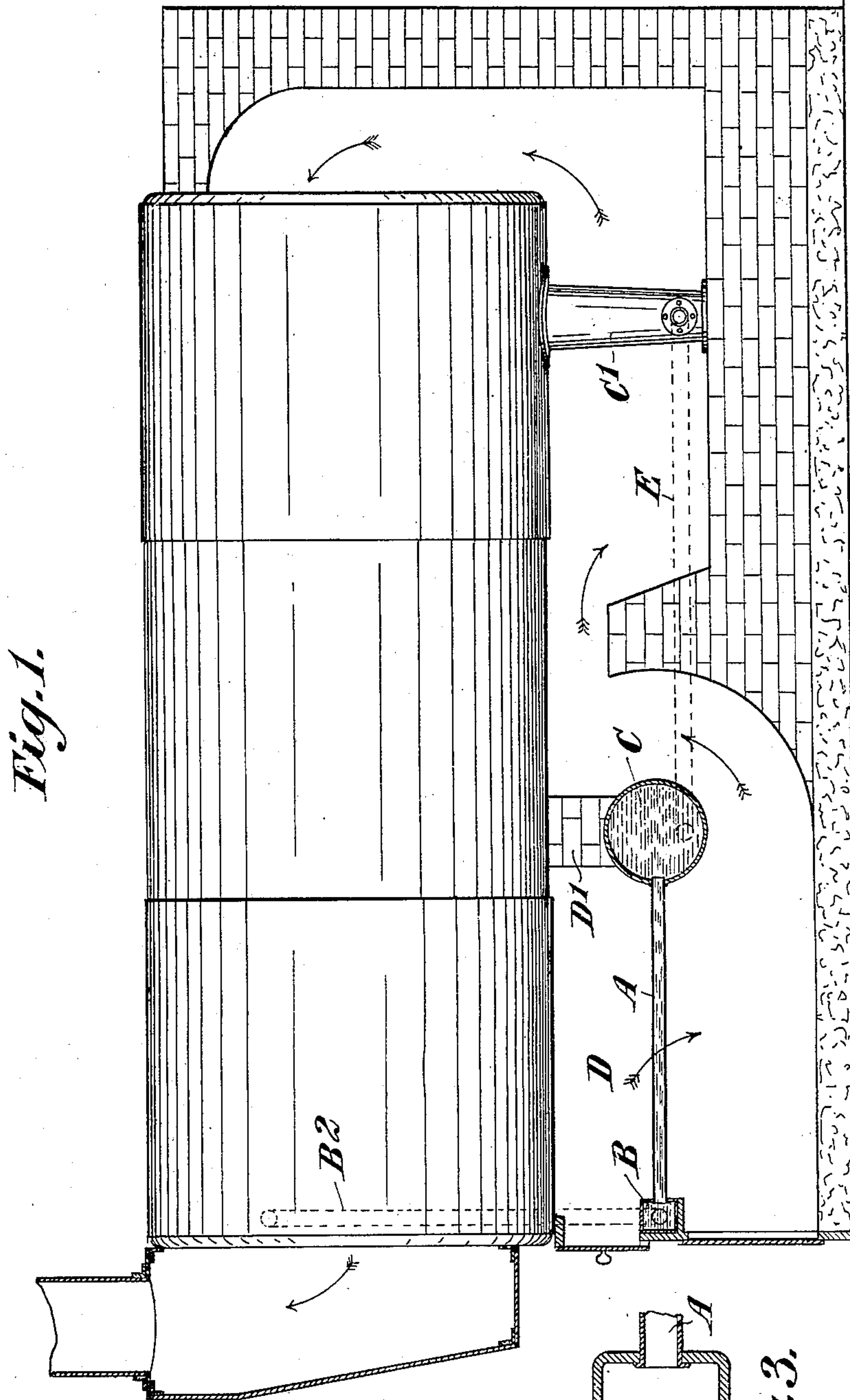


Fig. 1.

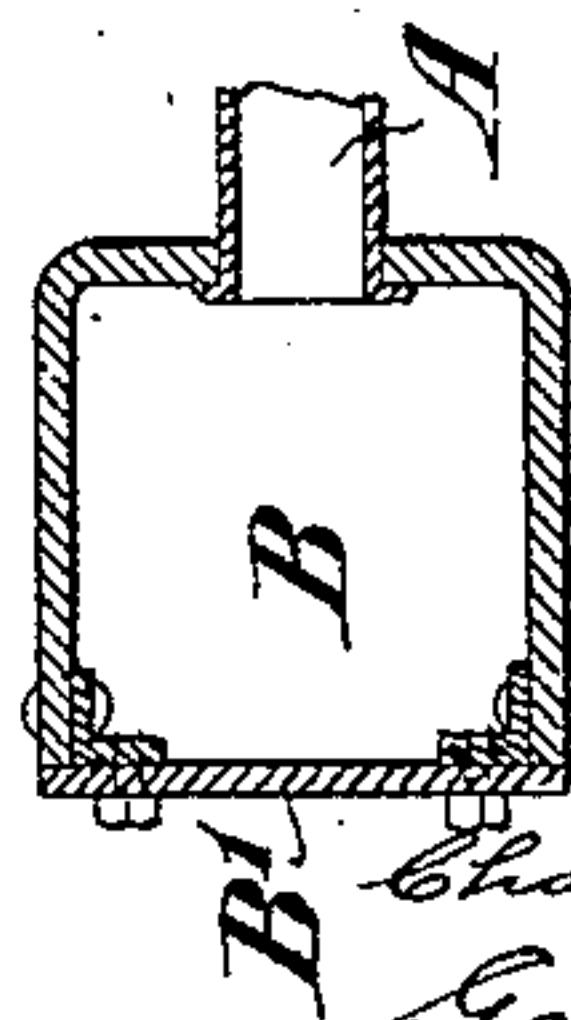


Fig. 3.

WITNESSES

W. P. Burke
 H. F. Heuman.

INVENTORS

Charles Nipress Chandler
 George Dow.
 BY Newhall White

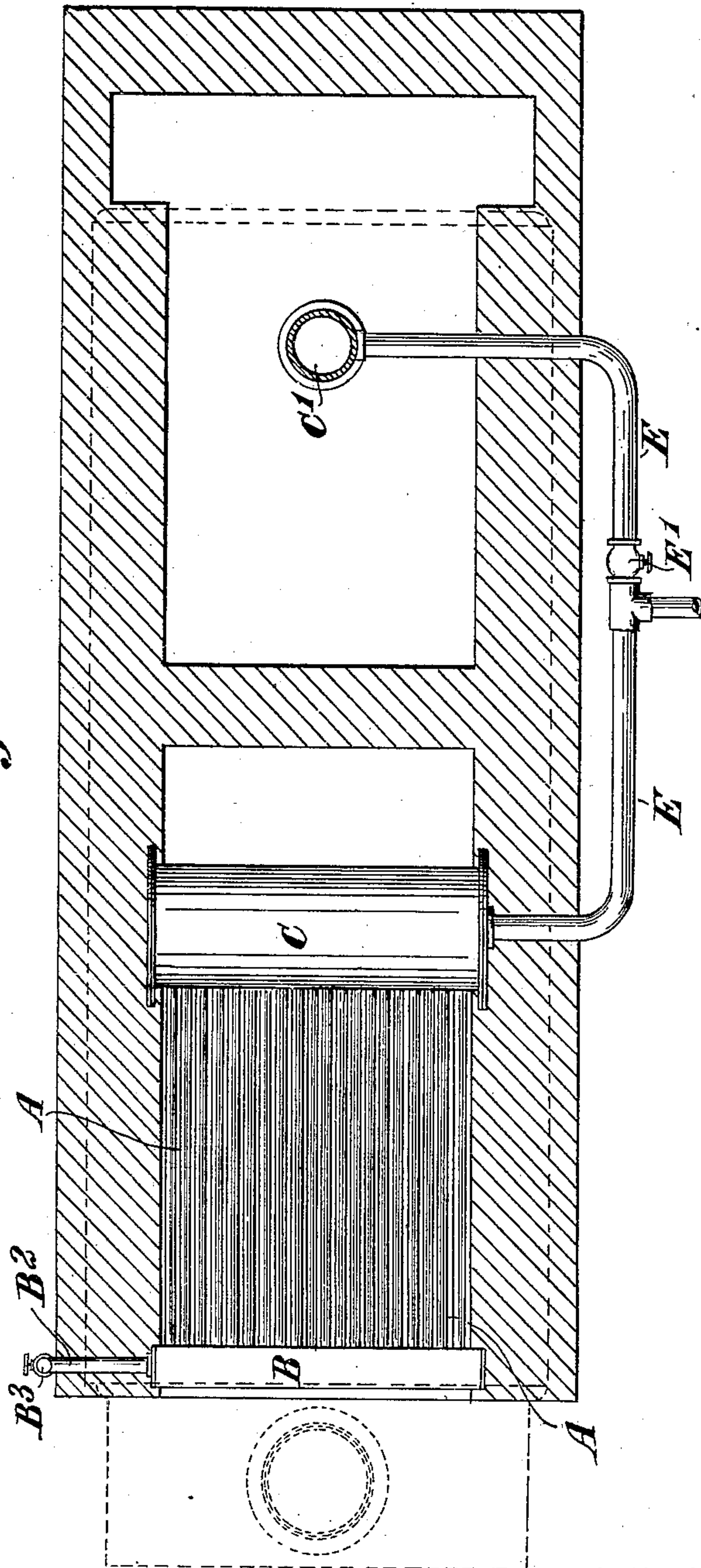
ATTY.

C. N. CHANDLER & G. DOW.
 DOWNDRAFT BOILER.
 APPLICATION FILED AUG. 5, 1908.

917,751.

Patented Apr. 13, 1909.
 2 SHEETS—SHEET 2.

Fig. 2.



WITNESSES

W. P. Burke
A. F. Heuman

INVENTORS

Charles Nipress Chandler
George Dow
 BY *McKellam White*

ATTY.

UNITED STATES PATENT OFFICE.

CHARLES NIPRESS CHANDLER AND GEORGE DOW, OF YARRAVILLE, VICTORIA,
AUSTRALIA.

DOWNDRAFT-BOILER.

No. 917,751.

Specification of Letters Patent.

Patented April 13, 1909.

Application filed August 5, 1908. Serial No. 447,142.

To all whom it may concern:

Be it known that we, CHARLES NIPRESS CHANDLER, of 2 Sussex street, and GEORGE DOW, of 5 Avoca street, both subjects of the
5 King of Great Britain and Ireland and residing at Yarraville, in the county of Bourke, State of Victoria, and Commonwealth of Australia, have invented new and useful Improvements in Downdraft-Boilers, of
10 which the following is a specification.

Our invention relates to improvements in fire-grates for steam boilers, and has for its object the consumption of the smoke formed after charging the grates with a fresh supply
15 of coal, or other fuel.

In order that our invention may be clearly understood, reference may be had to the accompanying sheets of drawings, in which—

Figure 1 is a vertical section of a furnace,
20 Fig. 2 a horizontal section of same, and Fig. 3 an enlarged sectional view of front transverse tube B, the whole setting forth our invention as applied to a multitubular boiler.

25 Similar characters of reference are used to indicate like parts in the different views.

In constructing a smoke consuming grate according to our invention we employ a transverse tube B, from which is projected a
30 series of tubular metal firebars A, through which the feed water supplied to boiler freely circulates. The transverse tube B, is preferably made square in section, but may be cylindrical. The said tube is pro-
35 vided with a removable front plate B¹ in order that the ends of tubular firebars A, may be expanded. The said tubular firebars A may be spaced at any suitable distance apart. The inner ends of said firebars
40 are connected with a transverse cylindrical water tube C, which forms the back of fire space D. The space formed between upper side of tube C, and the underside of boiler is closed with firebricks D¹ in order to direct
45 the flame and smoke downward between the tubular metal firebars A, as shown by the arrows in Fig. 1. The said cylindrical water tube C is provided with a manhole and may be connected to the blow off tube C¹ or
50 any other suitable portion of the boiler by the pipe E, which is also fitted with the stop cock E¹. The tee branch extending from pipe E carries the blow off cock. One end of the said transverse tube B is connected
55 with the boiler by the pipe B². The said

pipe may be furnished with a stop cock B³. The feed water pipe may be connected with the boiler by the pipe E and the transverse hollow tube B, by the pipe B² a complete
60 circulation of water is thus maintained through the said transverse hollow tube B, the tubular metal firebars A, the cylindrical water tube C, and the boiler.

The mode of working our invention is as follows:—The boiler is filled with water in
65 the usual way, occupying the transverse tube B, the tubular fire bars A, the cylindrical watertube C and all the pipes connected therewith. The fire may now be lighted, steam produced and withdrawn as required. Feed
70 water may be supplied by pump or injector when a perfect circulation will take place. When a fresh charge of coal is supplied to the grate the down draft will carry the newly created smoke through the incandescent fire,
75 where it is consumed. The remaining fumes will follow the line of arrows to chimney.

The down draft grate described herein may be fitted to the multitubular, Lancashire,
80 Cornish, Babcock, or other class of boiler.

Having now described our invention, what we claim as new and desire to secure by Letters Patent is:—

A furnace comprising a boiler, a fire room located below the same, a transverse tube B
85 extending across the top of the fire room, said tube having its front face removable, a transverse cylindrical tube C in the rear of the fire room, tubes connecting the tube C with the tube B and acting as grate bars, a
90 wall supported on the tube C and extending up to the bottom of the boiler, a conduit for the products of combustion leading from the fire room below the tube C past the rear of the boiler and to the chimney, a vertical
95 blowoff tube C¹ in said conduit and extending downwardly from the bottom of the boiler, a pipe E connecting the tube C with said tube C¹, a cock E¹ in said pipe, a pipe connecting the upper part of the boiler with
100 the tube B, and a cock in said pipe.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

CHARLES NIPRESS CHANDLER.
GEORGE DOW.

Witnesses:

WILLIAM CONYERS,
ALFRED EDWARD EWINS.