(No Model.)

H. C. WILLIAMSON.

BOILER FURNACE.

No. 313,567. Patented Mar. 10, 1885.

Fig. 1.

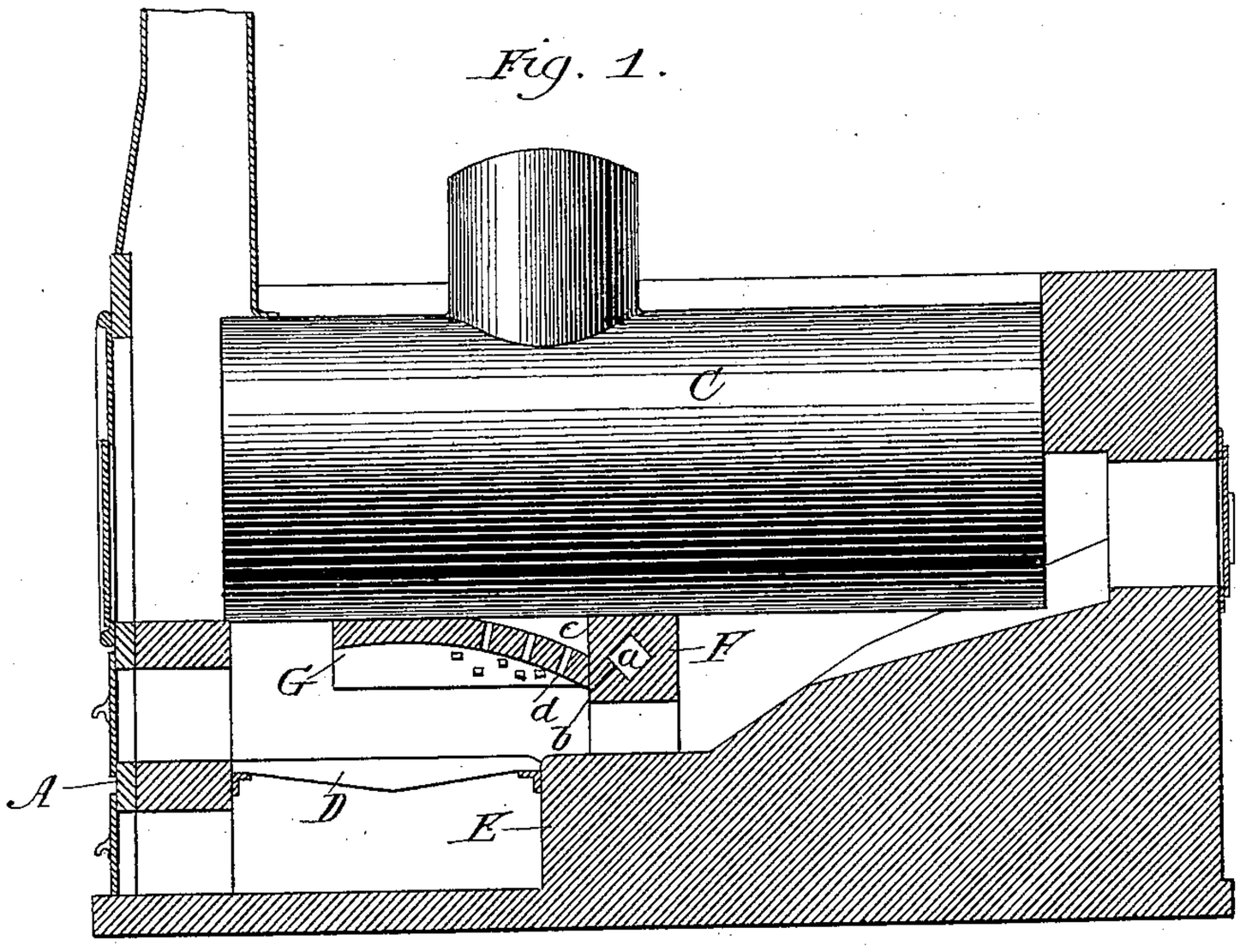
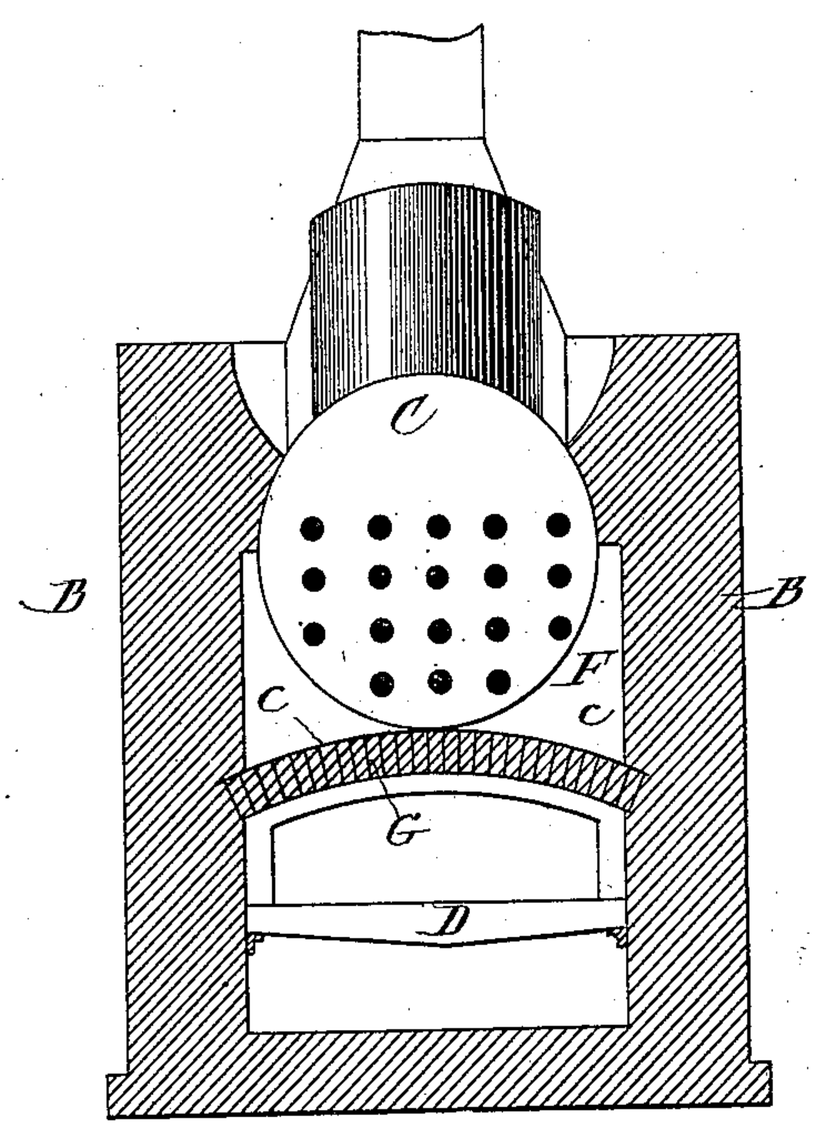


Fig. 2.



Witnesses:
Frank J. Blanchard,
Louis Nolting.

Inventor
Henry C. Williamson
By Wm. H. Lotz & Co.
Attorneys.

UNITED STATES PATENT OFFICE.

HENRY C. WILLIAMSON, OF MICHIGAN CITY, INDIANA.

BOILER-FURNACE.

SPECIFICATION forming part of Letters Patent No. 313,567, dated March 10, 1885.

Application filed July 15, 1884. (No model.)

To all whom it may concern:

Be it known that I, HENRY C. WILLIAMSON, a citizen of the United States of America, residing at Michigan City, in the county of La Porte and State of Indiana, have invented certain new and useful Improvements in Boiler-Furnaces, of which the following is a specification, reference being had therein to the accompanying drawings.

My invention relates to an improvement in boiler-furnaces.

The object of the invention is to so construct the furnace that the smoke arising from the fire-bed may be more perfectly consumed; and to the accomplishment of the above the invention consists of the novel devices and combination of devices as will be described and claimed.

Reference will be made to the accompanying drawings, in which Figure 1 is a sectional view through a furnace, and Fig. 2 a section of the same on line 1 1.

Like letters refer to like parts in each view.

A is the front wall of the furnace; B B, the side walls thereof; C, the boiler; D, the fire-grate, and E the bridge-wall, all of which parts may be of any well-known construction. A short distance to the rear of the grate, and above the bridge-wall, there is an arch, F, which upon its upper face is made to conform to the shape of the boiler, and between which and the bridge-wall a sufficient space is left for the passage of the heat to the flues.

In arch F, and communicating in any suitable way with the open air, is a passage, *a*, which communicates with the interior of the furnace through the openings *b*. A second arch, G, is situated in the fire-space over the fire-bed. Arch G extends from arch F toward the front wall of the furnace about one-half or two-thirds the distance, commencing at a point slightly above the openings *b*, formed in arch F, and being curved upwardly, so as to be in contact with the boiler at a point near its front end. This arch G is also curved so as to be convex in cross-section, and because of such construction, and because of the rounded shape of boiler C, there is an opening left at each side of the point of contact between it and the boiler and pockets or spaces, *c*, thus formed. Openings *d* are formed vertically through arch G, thereby forming communication between pockets *c* and the fire-space. These openings may be formed by alternately overlapping the bricks of which the arch is formed, or in any other suitable manner. By this arrangement of the arch directly over the fire-bed it will be seen that it will be thoroughly heated, and the smoke arising from the fire-bed, after passing into the pockets *c*, as indicated by the arrows in drawings, and through the openings *d* in the arch back over the fire-bed, will be thoroughly heated and consumed before it can pass to the flues. Another advantage in the construction exists in the fact that the reflection from the fire-bricks of which arch G is formed will assist in igniting the fuel, and thus when fresh coal is added it is ignited from the top and bottom.

What I claim is—

The combination, with a boiler, of a perforated arch, G, abutting against said boiler, spaces *c*, formed by the arch, the boiler, and the side walls of the furnace, and a suitable arch adapted to form communication between the outer air and the interior of the furnace, as set forth.

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

HENRY C. WILLIAMSON.

Witnesses:
M. J. CLAGETT,
WM. H. LOTZ.