

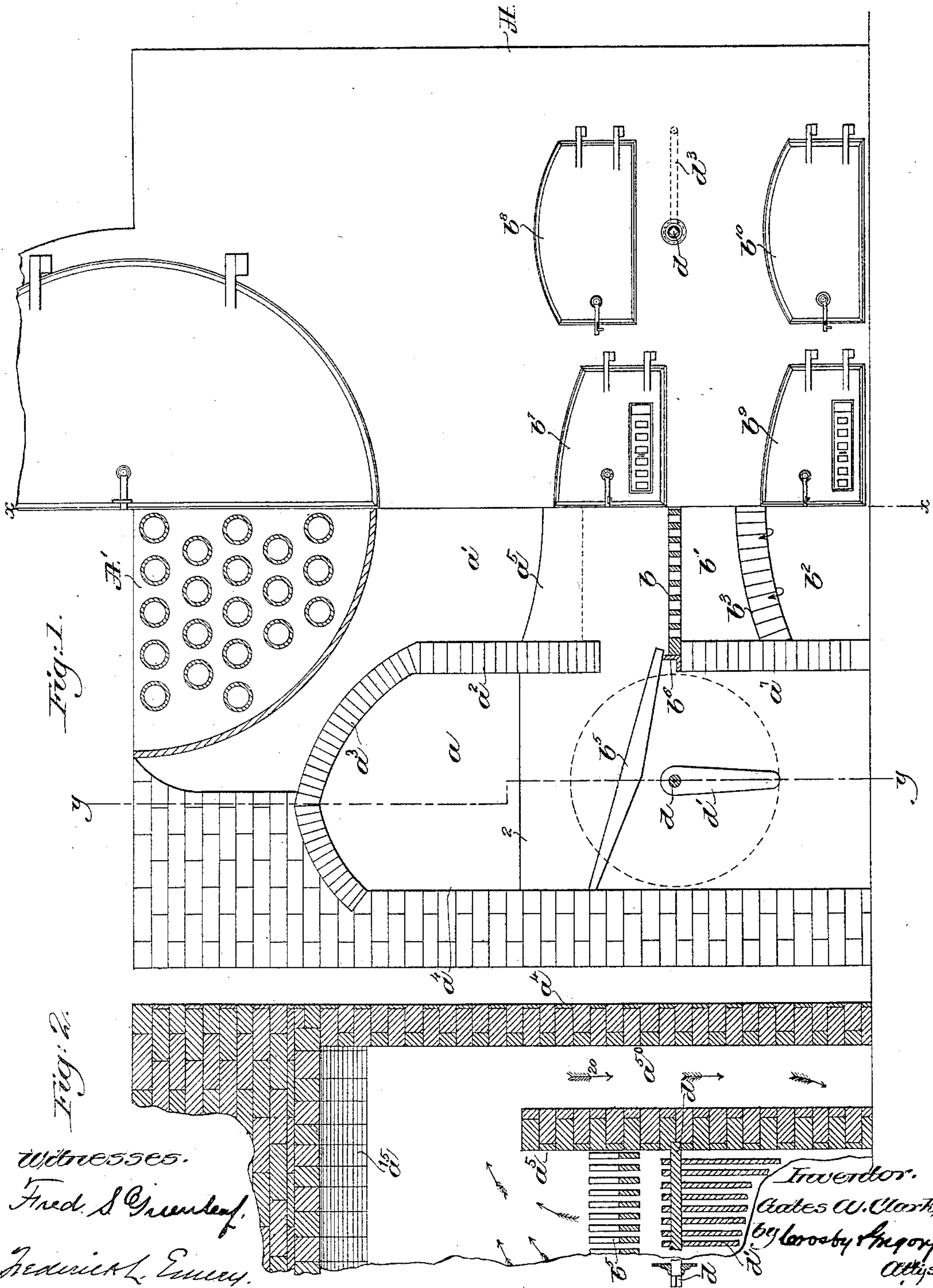
(No Model.)

2 Sheets—Sheet 1.

G. A. CLARK.
COKING FURNACE.

No. 399,379.

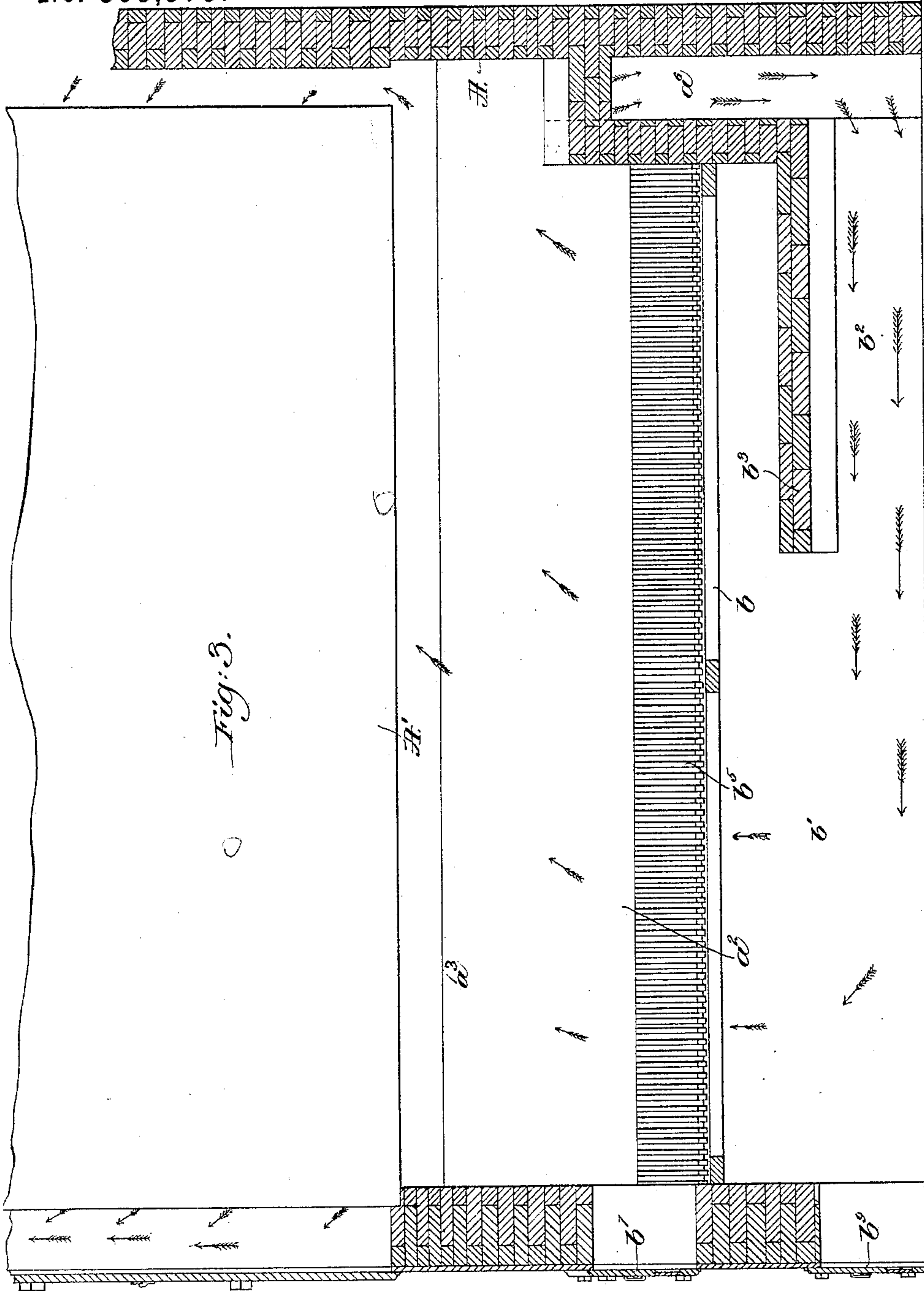
Patented Mar. 12, 1889.



G. A. CLARK.
COKING FURNACE.

No. 399,379.

Patented Mar. 12, 1889.



Witnesses.
Fred. S. Greenleaf
Frederick L. Emery

Inventor.
Gates A. Clark,
by Leroy & Gregory
attys.

UNITED STATES PATENT OFFICE.

GATES A. CLARK, OF ROCHESTER, NEW YORK, ASSIGNOR TO CLARK'S
COKING AND SMOKELESS FURNACE COMPANY, OF SAME PLACE.

COKING-FURNACE.

SPECIFICATION forming part of Letters Patent No. 399,379, dated March 12, 1889.

Application filed November 23, 1888. Serial No. 291,663. (No model.)

To all whom it may concern:

Be it known that I, GATES A. CLARK, of Rochester, county of Monroe, State of New York, have invented an Improvement in Coking-Furnaces, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

This invention relates to coking-furnaces of that class in which soft or bituminous coal or wood or other carbonaceous material is coked and the volatile products driven off by heat caused to pass up through the fire-bed to assist in combustion, and to obtain a maximum amount of heat from a minimum quantity of coal or other material.

My present invention is an improvement upon the coking-furnace shown and described in another application, Serial No. 287,078, filed by me October 3, 1888, and has for its object to simplify the construction of the furnace, as will be described, whereby increased surface at the center of the furnace may be obtained, my improvements being capable of being readily applied at a minimum cost to furnaces of ordinary construction, such as now commonly used.

My invention in coking-furnaces therefore consists in the combination, with the walls of the furnace and the walls forming the side walls of a coking-oven within said furnace, of a bridge-wall provided with a passage communicating with the fire-box below the grate, the said bridge-wall forming, with a wall of the furnace, an exit-flue for the coking-oven communicating with the passage in the bridge-wall, substantially as will be described.

Other features of my invention will be pointed out in the claims at the end of this specification.

Figure 1 in section and elevation represents a sufficient portion of a coking-furnace embodying my invention to enable it to be understood; Fig. 2, a longitudinal section through one of the coking-ovens on the line *y y*, Fig. 1, said figure being broken out to save space in the drawings; and Fig. 3, a longitudinal section through the center of the furnace on line *x x*, the boiler being shown in elevation.

The furnace A, having its walls composed

of brick or other suitable material and containing the boiler A', may be of any usual construction, substantially such as shown in the application referred to.

The furnace is provided at its sides with two coking-ovens, *a*, only one of which is shown in Fig. 1.

Each coking-oven *a* is separated from the main combustion-chamber *a'* by side walls, *a² a³*, substantially in line with each other and extended from the front toward the rear of the furnace, the said walls being built into the bridge-wall *a⁵* and the rear wall, *a⁴*, of the furnace, the top of the said coking-oven being formed, as herein shown, by the arch *a¹⁵*, also built into the rear wall, *a⁴*. The bridge-wall *a⁵* extends transversely across the furnace, and the portion of the said wall marked 2 in Fig. 1 forms with the rear wall, *a⁴*, a downwardly-extended flue, *a⁵⁰*. (See Fig. 2.) The central portion of the bridge-wall *a⁵* between the coking-ovens forms with the rear wall, *a⁴*, a similar flue, *a⁶*, (see Fig. 3,) which is partially separated from the flue *a⁵⁰* by the side wall *a²*, the said flues communicating near the bottom of the furnace. The side walls *a¹*, as herein shown, support the grate-bars *b* of the main combustion-chamber or fire-box, the said grate-bars having below them the usual ash-pit, *b'*.

The bridge-wall *a⁵* below the grate-bars *b* is provided with an opening, *b²*, (see Fig. 1,) by which the flue *a⁶* is connected to the ash-pit *b'*, the opening *b²* being provided, as herein shown, with a roof, shown as an arch, *b³*, but which may be a slab or plate of brick or other refractory material.

Each coking-oven *a*, as herein shown, is provided with inclined grate-bars *b⁵*, having one end supported by the rail *b⁶*, resting upon the wall *a³*.

The front wall of the furnace is provided with usual doors, *b⁷ b⁸*, by which access may be had to the combustion-chamber *a'* and the coking-oven *a*, respectively, and the said wall is also provided with doors *b⁹ b¹⁰*, by which access may be had to the ash-pit *b'* and the coking-oven below the grate-bars *b⁵*.

In operation the soft or bituminous coal or other analogous material to be coked is deposited upon the grate-bars *b⁵* through the door *b⁸*, and the said material is coked by the

heat from the fire in the combustion-chamber a' . The volatile products driven off by the heat pass toward the rear of the furnace, down the flue a^{50} , as indicated by arrows 20, and thence toward the center of the furnace through the flue a^6 into the ash-pit b' through the opening or passage b^2 . The roof b^3 of the passage b^2 is preferably extended toward the front end of the furnace a considerable distance, so that the volatile products are caused to pass up through the fire-bed near the front of the furnace as well as at the rear of the furnace.

In order that my improved furnace may be employed for coking soft coal containing metallic deposits—such, for instance, as iron pyrites—I have provided a disengaging device, herein shown as a shaft or rod, d , suitably journaled below the grate-bars b^5 , and provided, preferably, with a number of fingers, d' , of sufficient length to pass up through the grate-bars and disengage or detach any metal clinker accumulating on the grate-bars.

In practice the fingers d' will be located on the shaft so as to pass up between every three or four grate-bars, as desired.

The shaft d may be turned by a suitable key, a^3 , (indicated by dotted lines in Fig. 1,) from outside the furnace, thereby obviating the opening of the door to the coking-oven for purpose of poking the material being coked. The disengaging device also acts as a feeder to feed the material from the coking-oven into the combustion-chamber.

My improved coking-ovens may be readily applied to furnaces of ordinary construction, such as now commonly built, without extensive repairing and at a minimum cost.

I claim—

1. In a coking-furnace, the combination, with the walls of the furnace and the walls $a^2 a^3$, forming the side walls of a coking-oven within said furnace, of a bridge-wall, a^5 , provided with a passage communicating with the fire-box below the grate, the said bridge-wall forming with a wall of the furnace an exit-flue for the coking-oven communicating with the passage in the bridge-wall, substantially as described.

2. In a coking-furnace, the combination, with the walls of the furnace and the walls $a^2 a^3$, forming the side walls of a coking-oven within said furnace, of a bridge-wall, a^5 , provided with a passage communicating with the fire-box below the grate, and a roof for said passage extended into the ash-pit, the said bridge-wall forming with a wall of the furnace an exit-flue for the coking-oven communicating with the passage in the bridge-wall, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

GATES A. CLARK.

Witnesses:

Z. L. DAVIS,
WM. B. VAIL.