

(No Model.)

A. FABER du FAUR.
Process and Apparatus for Burning Pulverized Fuel.
No. 228,334. Patented June 1, 1880.

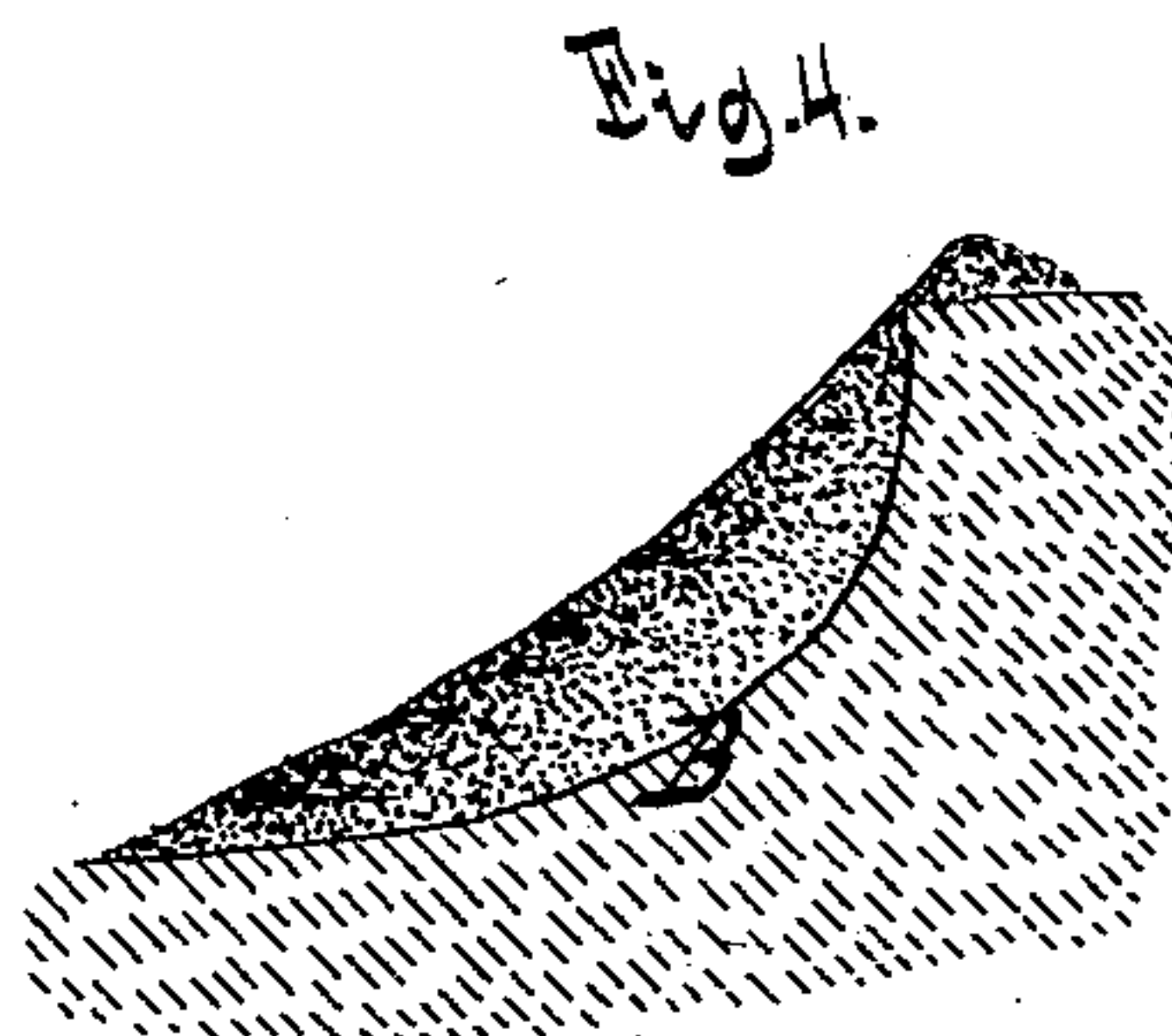
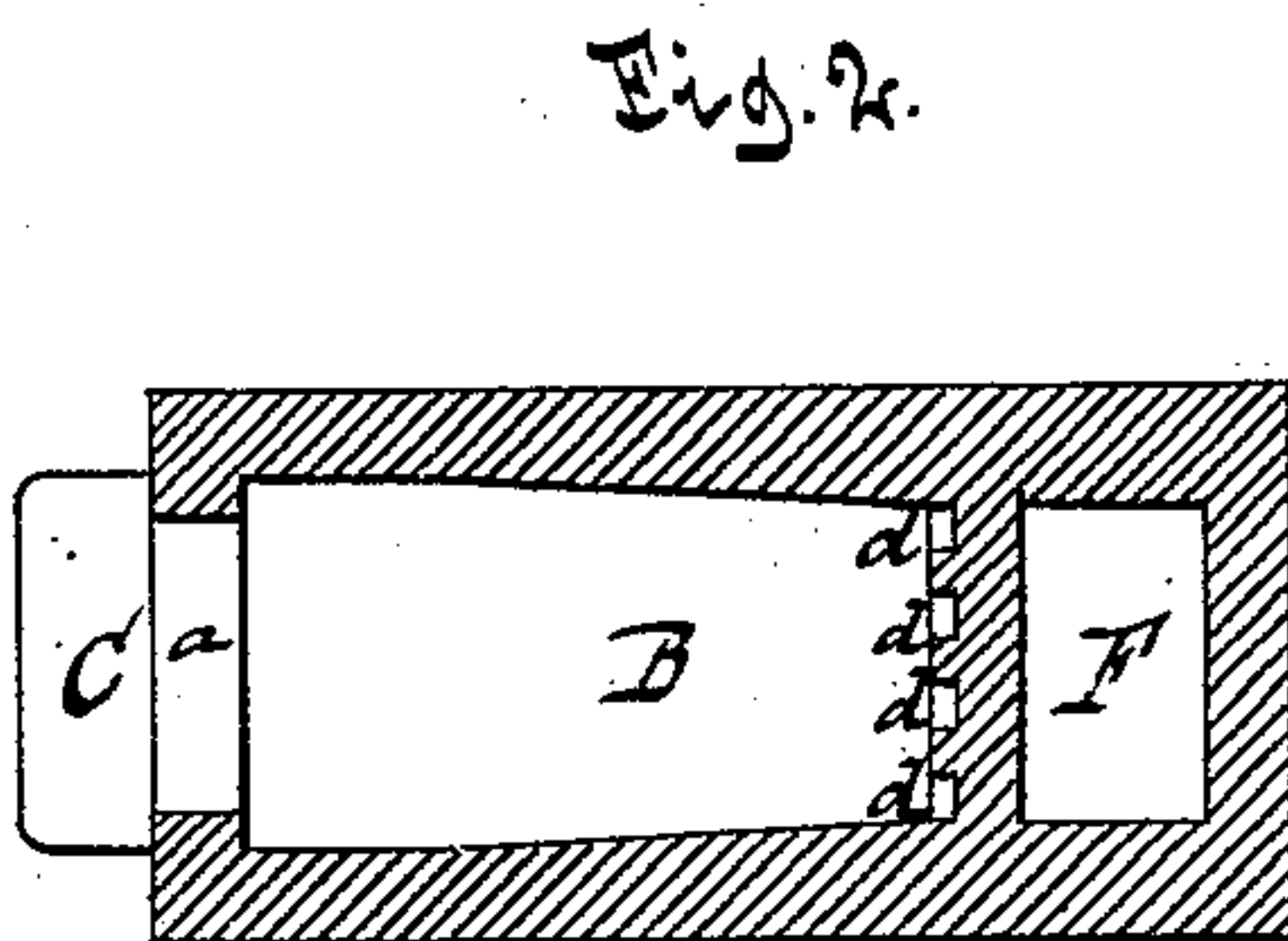
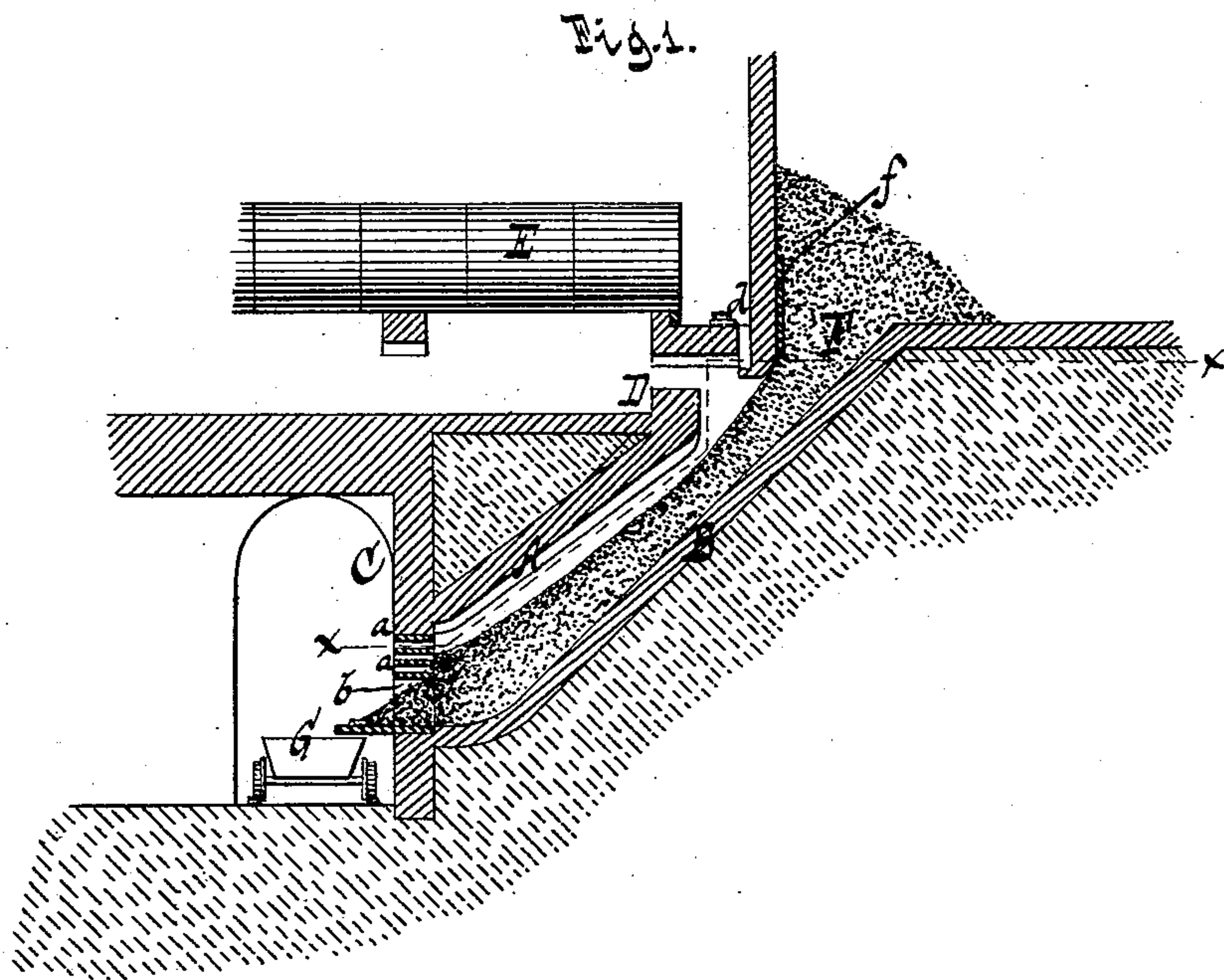


Fig. 3.



Witnesses
Otto Stufeland
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Inventor.
Adolph Faber du Faur
by Van Santvoord & Hauff
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UNITED STATES PATENT OFFICE.

ADOLPH FABER DU FAUR, OF NEWARK, NEW JERSEY.

PROCESS AND APPARATUS FOR BURNING PULVERIZED FUEL.

SPECIFICATION forming part of Letters Patent No. 228,334, dated June 1, 1880.

Application filed March 29, 1880. (No model.)

To all whom it may concern:

Be it known that I, ADOLPH FABER DU FAUR, a citizen of the United States, residing at Newark, in the county of Essex and State of New Jersey, have invented new and useful Improvements in Processes and Apparatus for Burning Anthracite-Coal Dust and other Pulverulent Fuel, of which the following is a specification.

Heretofore anthracite-coal dust has been burned either by attempting to force a current of air through the mass of fuel or by blowing air and coal-dust into a heated space.

The object of my invention is to utilize anthracite-coal dust or other pulverulent fuel by surface combustion.

My invention consists in a method of utilizing anthracite-coal dust or other pulverulent fuel by feeding such fuel at a slope beneath an inclined heated arch and admitting air upon the surface of the fuel at or near the bottom of the slope, whereby surface combustion is insured and the products of combustion are discharged at or near the top of the slope.

It also consists in the combination of an inclined arch and a chute, the chute being provided with openings at or near its bottom for the admission of air, and with an opening or openings at or near its top for the discharge of the products of combustion.

The accompanying drawings represent my invention as applied to the heating of a boiler.

Figure 1 is a vertical section; Fig. 2, a sectional plan on the line *xx*, Fig. 1. Fig. 3 is a detached front view of the gate which regulates the feed. Fig. 4 shows a modification of the bottom of my furnace.

Similar letters indicate corresponding parts.

In these drawings, the letter A designates the arch, built of fire-brick. It is sloped about the same as the slope of the fuel fed through the chute B, the bottom of which may be inclined, as shown in Fig. 1 of the drawings, or which may be made stair-shaped, or in any other suitable form, to allow the fuel first introduced to arrange itself on a slope or incline, over which the fuel subsequently fed in will slide down. The bottom may, for instance, be made in the form shown in Fig. 4, so that the mass of fuel first introduced produces a slope, on which the fuel subsequently fed in slides down.

C is the lower end of the furnace. The spaces *a a* allow air to be admitted into the furnace. *b* is the opening for removing ashes. D is the fire-bridge, through which the flame passes to the space beneath the boiler E. F is the opening for charging the fuel.

The air may be carried into the furnace by natural draft or by a blower. It may also be heated in the usual manner. The quantity of air to be admitted is to be regulated by proper slides or dampers where it enters the furnace, or by a damper in the chimney-flue, or by both methods together.

At the charging-opening a gate, *f*, may be used to regulate the thickness of the layer of fuel. This gate, Fig. 3, may have its lower edge serrated, so as to cause the fuel to arrange itself with an undulating surface, and thereby to increase the exposed surface of the fuel.

For burning the gases which are formed when the furnace is not run to its full capacity, air is admitted at *d*, the quantity being regulated by a slide or damper. The slope may be modified in its form by a forced feed; but I prefer to feed the fuel simply by gravity.

The operation of the furnace is as follows: The furnace is first heated up by wood, or by wood and coarse coal. The coal-dust is then thrown on the chute and kept piled up at the charging-opening. The hot gases and hot arch heat the fuel at the surface to such a degree that the incoming air will burn it off at the surface, so that at the lower end of the slope nothing but ashes are left. The ashes are from time to time drawn out at the bottom, and may at once be raked into a car, G. When necessary, tools may be introduced through the air-openings and through the ash-pit for the purpose of stirring the fuel, and separate side openings may also be provided for this purpose.

The form of the furnace may be modified in different manners—for instance, the flame may pass around the fuel at the top, so as to have the boiler at the opposite side from that shown in the drawings.

What I claim as new, and desire to secure by Letters Patent, is—

1. The method of utilizing anthracite-coal dust or other pulverulent fuel by feeding such fuel at a slope beneath an inclined heated arch

and admitting air upon the surface of the fuel at or near the bottom of the slope, whereby surface combustion is insured and the products of combustion are discharged at or near
5 the top of the slope, substantially as described.

2. The combination, in a furnace for burning pulverulent fuel, of an inclined arch and a chute, the chute being provided with openings at or near its bottom for the admission of air,
10 and with an opening or openings at or near its top for the discharge of the products of combustion, substantially as described.

3. The combination, in a furnace for burning pulverulent fuel, of an inclined arch and a
15 chute, the chute being provided with openings

at or near its bottom for the admission of air, and with an opening or openings, at or near its top, for the discharge of the products of combustion, the top wall having an opening or openings, *d*, for admitting air to the heated
20 gases rising from the heated fuel, substantially as described.

In testimony whereof I have hereunto set my hand and seal in the presence of two subscribing witnesses.

A. FABER DU FAUR. [L. S.]

Witnesses:

W. HAUFF,

E. F. KASTENHUBER.