# A. Dart,

## Small Coal Furnace.

No. 111,182. Patented Jan. 24. 1871.

Fig. 1.

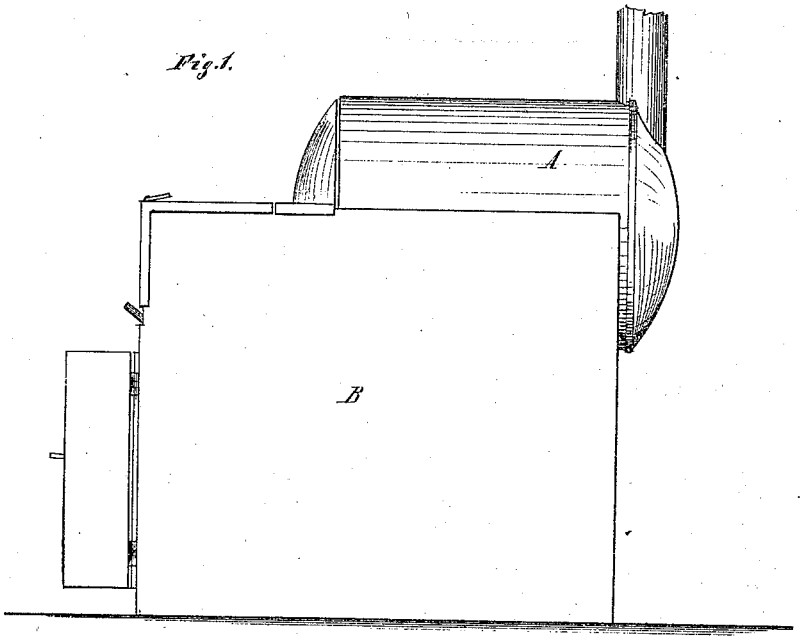
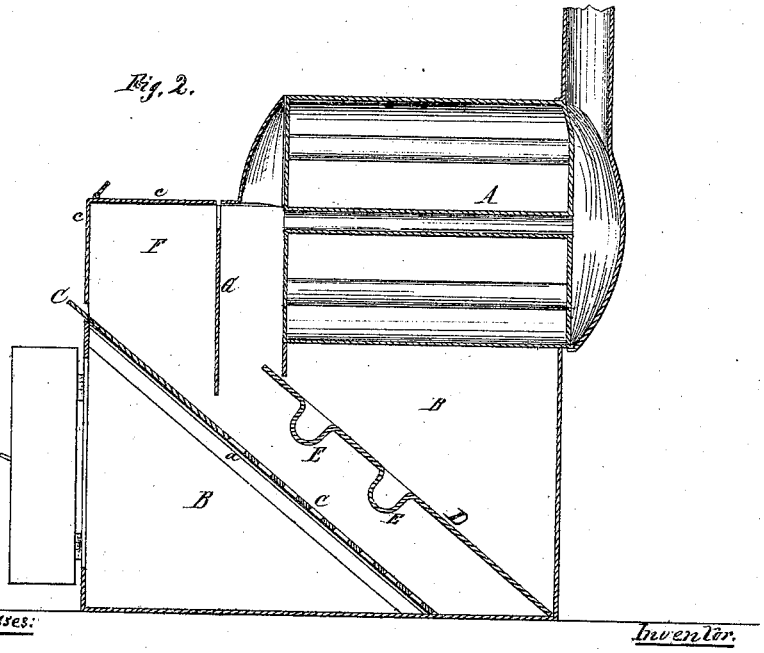



Fig. 2.




Witnesses:

John M. Wilson
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Inventor:

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# United States Patent Office.

ALFRED DART, OF CARBONDALE, PENNSYLVANIA.

Letters Patent No. 111,182, dated January 24, 1871.

## IMPROVEMENT IN FURNACES FOR BURNING SMALL COAL OR CULM.

The Schedule referred to in these Letters Patent and making part of the same.

*To all whom it may concern:*

Be it known that I, ALFRED DART, of Carbondale, in the county of Luzerne and State of Pennsylvania, have invented a new and improved Method of Burning Culm and other fuel; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawing and to the figures and letters of reference marked thereon.

Figure 1 is a side elevation of a furnace-chamber containing an inclined grate, with a cover applied according to my invention, and

Figure 2 shows a vertical section of the same.

The object of my invention is to provide for public use an improvement in grates for furnaces of steam-generators or others of analogous character, whereby the fuel placed or fed upon an inclined or oblique grate shall be kept in a thin stratum thereon, and the ascending flame be caused to come in contact with the upper surface of the coal; and

The invention consists in combining with the inclined grate a vertically-adjustable gate, and a corrugated or grooved cover, as hereinafter described.

Referring to the drawing—

A represents a steam-boiler or generator, and

B the furnace-chamber of the same.

C is a grate placed in an inclined or oblique position in the chamber B. This grate may be of the ordinary or any other suitable or preferred construction, and may be supported on flanges or bars *a*, attached to the walls of the chamber or otherwise, as preferred.

D is a corrugated cover, arranged parallel with and a short distance above the grate, and similarly or otherwise supported. This cover is corrugated or grooved transversely, to form downwardly-projecting ribs E E.

The object of this construction is to form deflectors which shall cause the flame and heated air or products of combustion ascending from the lower part of the grate, on their way to the boiler-flues, to impinge on or pass through the coal resting on the grate, thereby igniting the same on its upper surface and increasing the heat. It is also evident that the smoke of the flame from the lower part of the grate will be consumed more or less by the deflection given to it in the ascending course.

The fuel to support combustion is placed in the space F, which may be closed by a cover, *c*.

To regulate the quantity of coal or other fuel admitted to or upon the grate, I have provided a gate, G, which is arranged to be vertically adjusted by any suitable means. Ordinarily, however, it need not be adjusted, but remain fixed at a certain distance above the grate. It forms one side of the chamber through which the products of combustion and flame find access to the boiler-flues.

By my invention the consumption of fuel is greatly economized, a given degree of heat attained in a much shorter time than with the ordinary grate, and the feed maintained in a regular manner and without consuming a corresponding amount of labor and time in attaining the result.

I claim as new—

1. The combination, with the inclined grate C, of the cover D, having transverse deflectors E E, substantially as and for the purpose specified.

2. The gate G, arranged with the grate C, as shown and described, for the purpose specified.

ALFRED DART.

Witnesses:

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