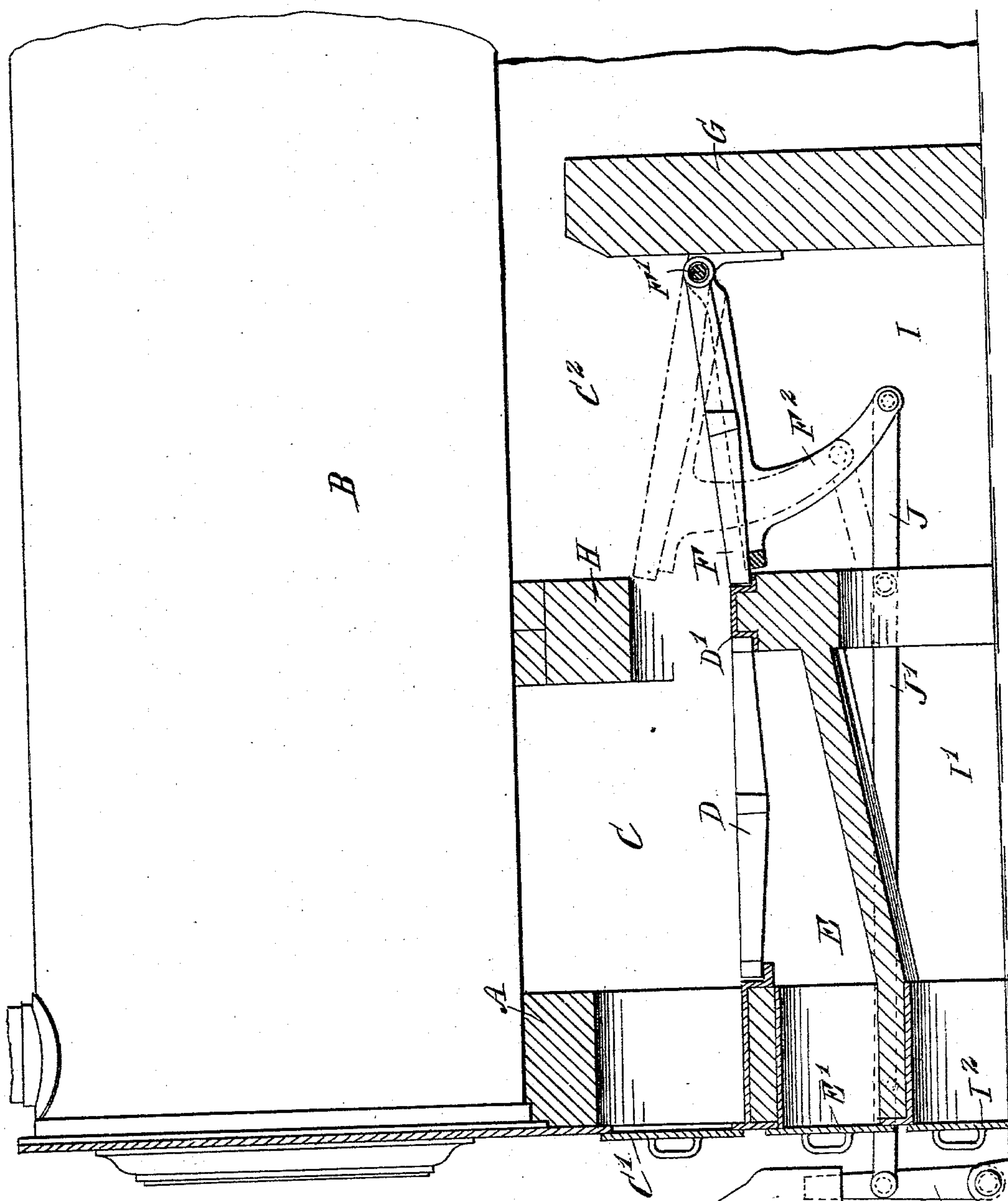


(No Model.)

A. L. THORN.  
FURNACE.

No. 551,240.

Patented Dec. 10, 1895.



WITNESSES:

H. Walker

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# UNITED STATES PATENT OFFICE.

ABRAHAM LINCOLN THORN, OF LUMP CITY, MONTANA.

## FURNACE.

SPECIFICATION forming part of Letters Patent No. 551,240, dated December 10, 1895.

Application filed August 14, 1895. Serial No. 559,267. (No model.)

*To all whom it may concern:*

Be it known that I, ABRAHAM LINCOLN THORN, of Lump City, in the county of Jefferson and State of Montana, have invented a new and Improved Furnace, of which the following is a full, clear, and exact description.

The object of the invention is to provide a new and improved furnace which is simple and durable in construction, very effective in operation, and arranged to insure a complete combustion of the fuel.

The invention consists principally of an auxiliary movable grate in the rear of the front or ordinary grate, the said movable grate being adapted to receive the burning or coked fuel from the front grate, and to permit the smoke and gases of the burning fuel from the front grate to pass through it.

The invention also consists of certain parts and details and combinations of the same, as will be fully described hereinafter, and then pointed out in the claims.

Reference is to be had to the accompanying drawing, forming a part of this specification, in which the figure is a sectional side elevation of the improvement.

The improved furnace is provided with a brickwork A, in which is set the boiler B, and in which is formed the fire-box C, provided with a door C', through which the fuel is introduced into the fire-box and upon the grate D. Below the latter is arranged the usual ash-pit E, provided with a suitable door E' for removing the ashes, the bottom of the said ash-pit being preferably made inclined, as indicated in the drawing.

In the rear of the grate D is arranged a second grate F, pivotally connected at its rear end at F' to the bridge-wall G, while the front end of the grate F is adapted to rest on the grate-wall D', as is plainly indicated in the drawing, so that the fuel from the front grate D can be conveniently pushed rearwardly upon the grate F. The latter is adapted to be swung upwardly into an inclined position, as indicated in dotted lines in the drawing, the free end of the grate then abutting against a tile arch H, extending over the grate-wall D' to the boiler B and the side walls, so that the smoke and gases from the burning fuel

from the grate D pass under the arch H and through the grate F when the latter is in an uppermost position. The bridge-wall G, with the grate F and arch H, forms a second combustion-chamber C<sup>2</sup> in the rear of the combustion-chamber C.

The grate F extends over an ash-pit I, having an extension I' under the ash-pit E, and provided at the front of the furnace with a suitable door I<sup>2</sup>, which latter is normally closed, so as to prevent any air from passing to the ash-pit I and grate F. The door I<sup>2</sup> is only opened for removing the ashes from the ash-pit I. The grate F is provided with an arm F<sup>2</sup> extending downwardly into the ash-pit I, and connected by a link J with a rod J', pivotally connected with an exterior lever K under the control of the operator, to enable the latter to move the grate F from its lowermost position, as shown in full lines in the drawing, up into the inclined position and back again, as the case may be.

The operation is as follows: When the furnace is in operation, the grate F is normally in an uppermost position, so that the smoke and gases of the burning fuel in the fire-box C pass through the said grate F. The latter is lowered from time to time to receive the burning, coked fuel on the grate D, the said fuel being pushed rearwardly upon the top of the grate F, after which the latter is immediately raised into its uppermost position. Now it will be seen that the smoke and gases passing from the chamber C through the grate F insure a complete combustion of the fuel burning on the said grate, and at the same time consume all the smoke and utilize the burning fuel to the fullest advantage.

The furnace can be fired with hard coal or wood by simply dropping the rear or auxiliary grate F, to permit of using the furnace like any ordinary furnace.

Having thus fully described my invention, I claim as new and desire to secure by Letters Patent—

1. A furnace, provided with a front grate, and an auxiliary movable grate in the rear of the said front grate the said movable grate being adapted to receive the burning or coked fuel from the front grate, and also adapted to



swing into position for the gases of the front grate to pass through the auxiliary grate, substantially as shown and described.

2. A furnace, comprising two combustion chambers located one in front of the other and each having a grate, of which the rear grate is adapted to receive the fuel from the front grate and is also adapted to swing into an inclined position, so that the smoke and gases from the first combustion chamber pass through the grate to reach the second combustion chamber, substantially as shown and described.

3. A furnace, comprising a combustion chamber, a grate in the said combustion chamber, an arch over the wall for supporting the rear end of the said grate, a second combustion chamber in the rear of the said arch, and a hinged grate for the said second combustion chamber, and adapted to rest at its free end

on the said grate wall, and also adapted to abut with its free end on the said arch, substantially as shown and described.

4. A furnace, comprising a combustion chamber, a grate in the said combustion chamber, an arch over the wall for supporting the rear end of the said grate, a second combustion chamber in the rear of the said arch, a hinged grate for the said second combustion chamber, and adapted to rest at its free end on the said grate wall, and also adapted to abut with its free end on the said arch, and means, substantially as described, for imparting a swinging motion to the said second grate, as set forth.

ABRAHAM LINCOLN THORN.

Witnesses:

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THOS. T. LYON.