(No Model.)

J. CARSON.

FURNACE.

No. 271,418. Patented Jan. 30, 1883.

Fig. 1

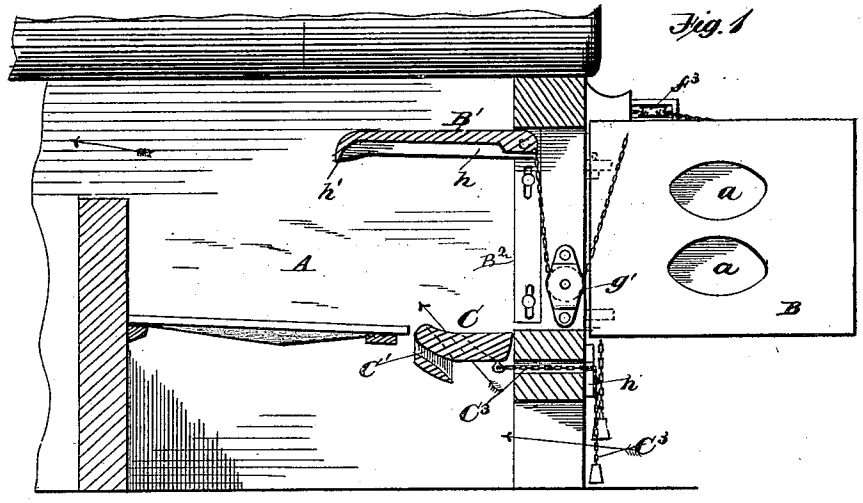


Fig. 2.

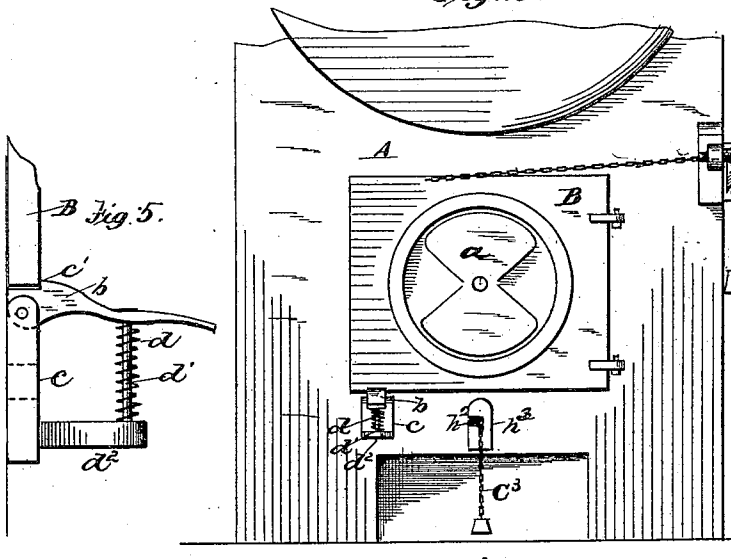


Fig. 5.

Fig. 6

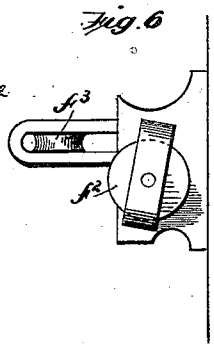


Fig. 7.

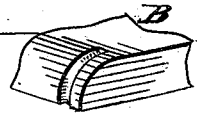


Fig. 3.

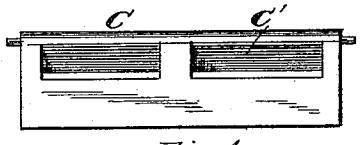
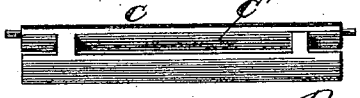


Fig. 4.



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UNITED STATES PATENT OFFICE.

JOHN CARSON, OF CLEVELAND, OHIO.

FURNACE.

SPECIFICATION forming part of Letters Patent No. 271,418, dated January 30, 1883.

Application filed April 7, 1882. (No model.)

To all whom it may concern:

Be it known that I, JOHN CARSON, a citizen of the United States, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Furnaces; and I do hereby declare the following to be a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same.

Figure 1 is a longitudinal section of my improvement in furnaces. Fig. 2 is a front view. Fig. 3 is a plan view of draft-regulator. Fig. 4 is an edge view of Fig. 3. Fig. 5 is a side view of catch. Fig. 6 is a side view of bracket. Fig. 7 is a view showing portion of inner door, B′, where chain is secured to said door.

The purpose of this invention is to prevent, to the greatest possible extent, the ingress of cold air when the fuel is supplied to the furnace, preventing extremes of expansion and contraction and to effect the better regulation of the draft, promoting combustion, including the perfect consumption of the smoke; and the nature of said invention consists in the employment of an inner door adapted to be operated simultaneously with the opening and closing of the outer door, and of a draft-regulator capable of operation by suitable means at the front of the furnace, substantially as hereinafter more fully set forth and claimed.

To put into practice my invention, I employ, as will be observed by reference to the accompanying drawings, in connection with the furnace A, an outer door, B, hung in the usual way and of the usual construction, and an inner door, B′, hung so as to swing vertically, or at its upper end. The door B is hung in movable and adjustable plates B^2, having slots through which are inserted screws, which allow it to be adjusted or removed when it may be desired to use the outer door alone. The outer door, which is provided with a ventilator, *a*, to admit air to the inner door to prevent overheating it, is fastened or kept shut by the catch or lever *b*. The inner end of the lever is pivoted in an upright, *c*, secured against the furnace-front or in other support, while a short distance from said end it is provided with a shoulder, *c′*, and farther outward with a spring, *d*, coiled around an upright, *d′*, fastened to a bracket, d^2, affixed to the furnace-front, and passed through a slot in the lever and headed above the slot. The bar or bracket *c* has a slot and adjusting-screw to permit the raising or lowering of the fastening, as may be desired. It will be observed that as the door B is being closed it will ride upon and press down the lever until it passes the shoulder of the lever, when the door will drop down against the shoulder and the lever will spring upward, and thus secure the door. The unfastening of the door is effected by pressing with the shovel downward upon the handle of the lever. The door is pulled or swung open automatically by the descending weight *f*, attached to a chain, *f′*, or its equivalent, passing over a pulley, f^2, hung in a bracket affixed to a second bracket secured to the furnace, and over another pulley, f^3, hung in the second bracket and thence connected to the door. Though the inner door is opened and closed simultaneously with the outer door, it being connected thereto by a chain or its equivalent passed over a pulley, *g′*, suitably disposed with relation to the two doors, the inner door does not begin to move or open until the outer door is about half-way open. This door has a flange, *h*, at each side and a flange, *h′*, at its bottom to exclude the cold air from the furnace when the outer door is open partly, the bottom flange swinging clear of the furnace-bottom sufficiently for the passage under it of the fuel when the outer door is swung wide open to permit the supplying the furnace with fuel. It will be understood that the doors open in opposite directions. This prevents, to the greatest possible extent, the ingress of cold air when feeding the fuel into the furnace, preventing the subjection of the highly-heated surfaces to extremes of expansion and contraction. C is a dead-plate draft-regulator of oblong shape, having an upper inclined surface tapering toward the front of the furnace, and provided with forwardly-inclined passages C′ through it. It is hung at its ends in suitable hangers depending at the sides of the furnace-chamber, and arranged to permit of reciprocation by the weighted chain C^3 or its equivalent within an opening in the furnace-bottom, to

allow its passages to be adjusted with relation to the ash-pit chamber below, into which the external air is admitted.

It will be observed that by manipulating the chain C^3, passing through an aperture in the furnace-front, the angle of presentation of its passages C′ with the incoming air in the ash-pit can be changed so as to increase or diminish the amount of air admitted to the furnace, and thus effect the regulation of the draft, promoting combustion, and very effectually consuming the smoke. The ingress of air upon the inside of the inner door, as is the case with the use of this regulator, also serves to prevent the overheating of said door.

The chain or cord of the draft-regulator is secured in its aperture in the furnace-front by a notched lever, h^3, pivoted to the furnace-front.

I claim and desire to secure by Letters Patent—

1. In a furnace, the inner door mounted in adjustable and detachable bearing-plates, and having the side and bottom flanges, as and for the purpose set forth.

2. The oscillating dead-plate draft-regulator, having oblique air-passages and arranged within the furnace between the grate and the door, and provided with means for operating the same from the outside of the furnace, substantially as shown and described.

3. In a furnace, the combination, with the inner door having the side and bottom flanges, of the outer door, the pulleys and counterweight, and means for connecting the counterweight and doors, all constructed and arranged as and for the purpose set forth.

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

JOHN CARSON.

Witnesses:
CHAS. E. PENNERSELL,
F. J. WEBSTER.