W. O. CROCKER.

Hot-Air Furnace.

No. 163,050. Patented May 11, 1875.

Fig: 1.

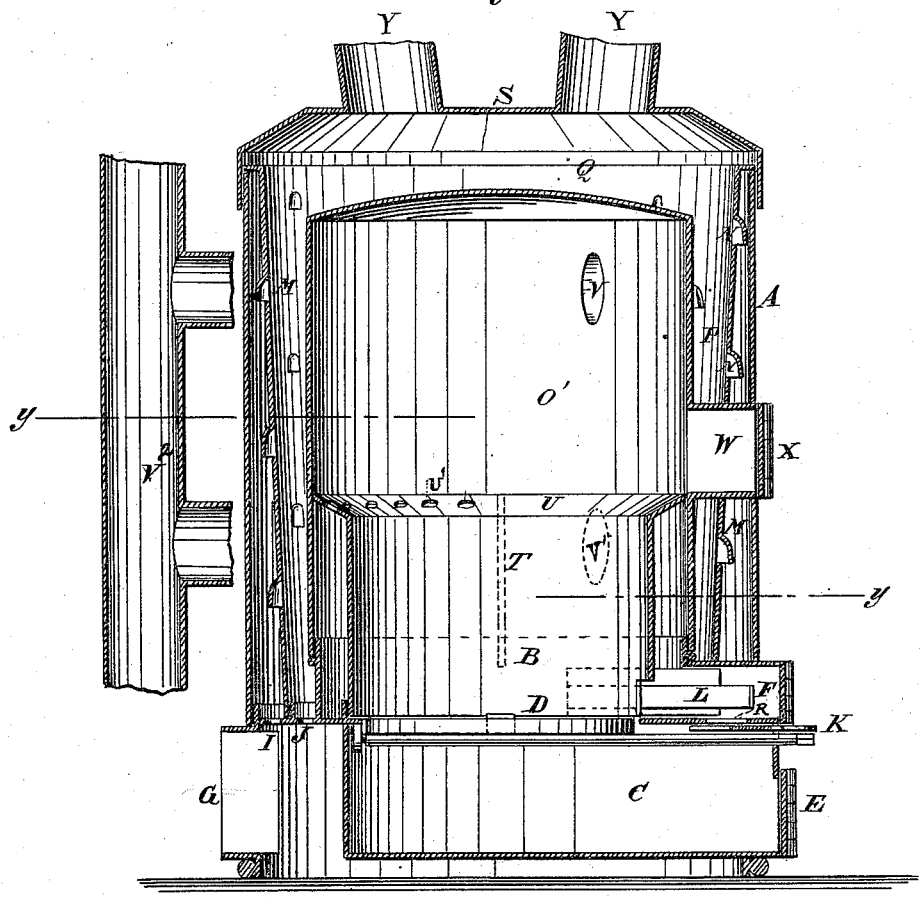
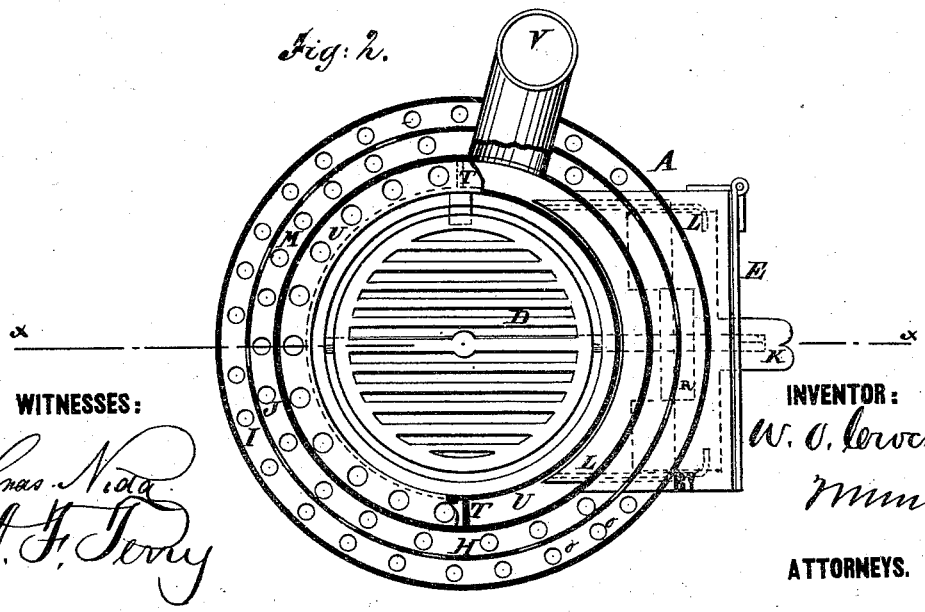


Fig: 2.



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UNITED STATES PATENT OFFICE.

WILLIAM O. CROCKER, OF TURNER'S FALLS, MASSACHUSETTS.

IMPROVEMENT IN HOT-AIR FURNACES.

Specification forming part of Letters Patent No. **163,050**, dated May 11, 1875; application filed December 19, 1874.

To all whom it may concern:

Be it known that I, WILLIAM O. CROCKER, of Turner's Falls, Franklin county, Massachusetts, have invented a new and useful Improvement in Furnaces, of which the following is a specification:

This invention relates to the construction of furnaces for heating dwellings and other buildings; and consists in the construction and arrangement of parts hereinafter described.

Figure 1 is a vertical section of my improved furnace taken on the line *x x*, Fig. 2; and Fig. 2 is a horizontal section on the line *y y*, Fig. 1.

Similar letters of reference indicate corresponding parts.

A is an outer casing, which incloses the fire-pot and combustion-chamber and jacket. This casing rests upon the base B of the furnace. C is the ash-pit, which fits into the base, and carries the grate D, the ash-pit door E, and clinker-chamber F. G is a broad opening in the base for the admission of cold air. The cover H of the base is provided with two rows of holes, I and J, communicating, respectively, with the space between the outer casing or shell A and the jacket or inner casing M, and the space between said jacket and the combustion-chamber O′. The jacket M, which stands upon the top of the base, between the two rows of holes, is perforated, by means of a conical punch, throughout its entire surface from the inside. The punch perforates only on the under side, leaving conical caps projecting over the opening N, which receives the air which enters the outside holes I, and cuts it up into numerous jets, and throws it in contact with the radiating combustion-chamber O′. This jacket is of less diameter at the lower end or base than it is at the top end, to give the air room to expand.

It is designed to have the area at the upper end about twice as large as it is at the base end. P represents this space.

The air which enters inside the jacket passes directly upward in contact with the combustion-chamber.

Q is the hot-air chamber, above the combustion-chamber, from whence the air passes through discharge-tubes Y Y in the cap S, and is conveyed to any part of the dwelling.

The outer casing A and perforated jacket fulfill the double purpose of preventing the excessive loss of heat by radiation, and the cold drafts so common in furnaces on windy days when the air is fed from the outside of the building.

T T are vertical partitions in the fire-pot, which correspond in width with the width of the flaring flange U, around which flange the combustion-chamber fits, as seen in Fig. 1.

The top rim U, or flaring flange of the fire-pot, is provided with a series of perforations, U′, in the rear of the partitions T on the fire-pot, so as to enable an indirect draft to take place by causing the products of combustion to pass through the top rim, down the rear side of the fire-pot, under the partition-plates, up the front side of the fire-pot, and through the lower exit V^1. The object of this arrangement is to cause the heated gases to pass over the entire surface of the combustion-chamber. The indirect draft is caused to take place when the communication of the direct or upper flue with the fire-chamber is closed, which result is effected by any suitable means or device. The flue-chambers or direct and indirect draft-passages V V^1 are located within the combustion-chamber and the outer walls of the furnace, and communicate at their outer ends with a vertical connecting-flue, V^2.

W is an opening, closed by the door X, through which the fuel is introduced.

The fire-pot is provided with an opening in its front side for enabling the clinkers to be drawn into the chamber F, which has a clinker-discharge port, R, communicating with the ash-pit, and closed by a slide, K, for preventing air from entering the fire-pot through the clinker-chamber. All the air necessary for the support of combustion passes through the grate from the ash-pit. A segmental slide, L, closes the communication between the clinker-chamber and the annular space formed between the fire-pot. This slide is to be drawn out only for the purpose of cleaning the annular space.

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

1. In a heating-furnace, the combination, with an outer casing, A, and inner combustion-chamber O′, of an intermediate jacket, M, which has openings N, and is made of a greater diameter at the top than at the bottom, as and for the purpose described.

2. The combination of the fire-pot having a flaring flange, U, external partition-plates T, and openings U′ in the flange, with the combustion-chamber O′, base B, and indirect draft-flue V′, as and for the purpose described.

3. The combination of the base B, having a double series of openings, I J, in its top, with the casing A, perforated jacket M, and combustion-chamber O′, as herein set forth.

WILLIAM O. CROCKER.

Witnesses:
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