

No. 700,802.

Patented May 27, 1902.

H. J. NOYES.
HEATING FURNACE.

(Application filed July 20, 1901.)

(No Model.)

3 Sheets—Sheet 1.

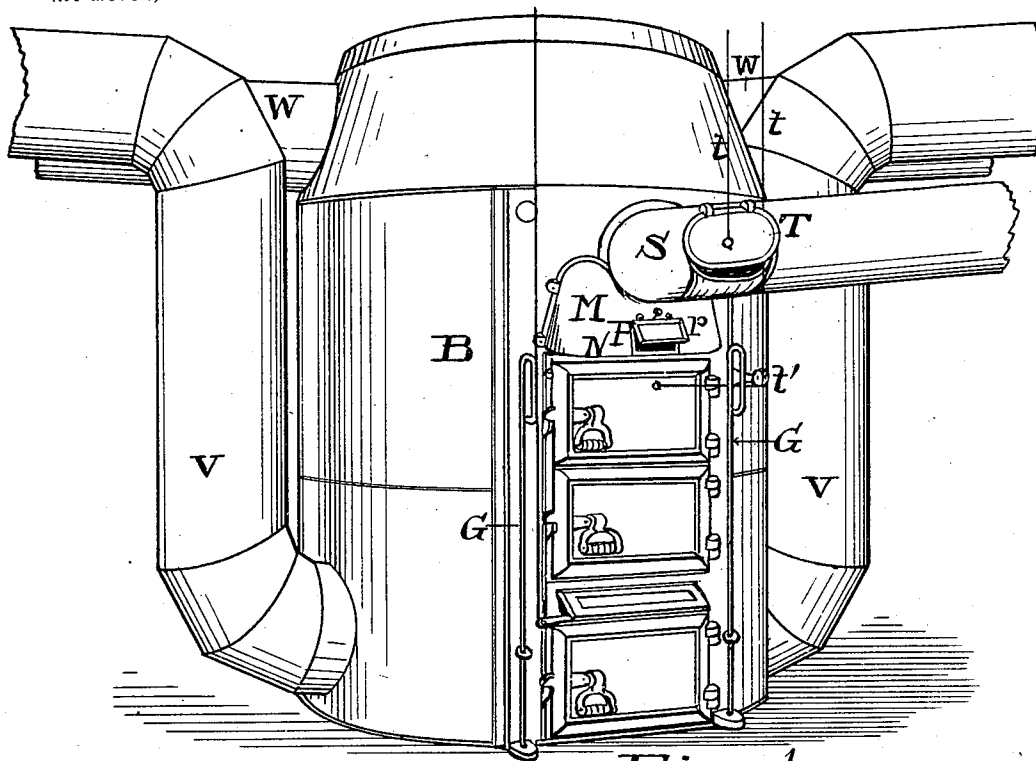


Fig. 1.

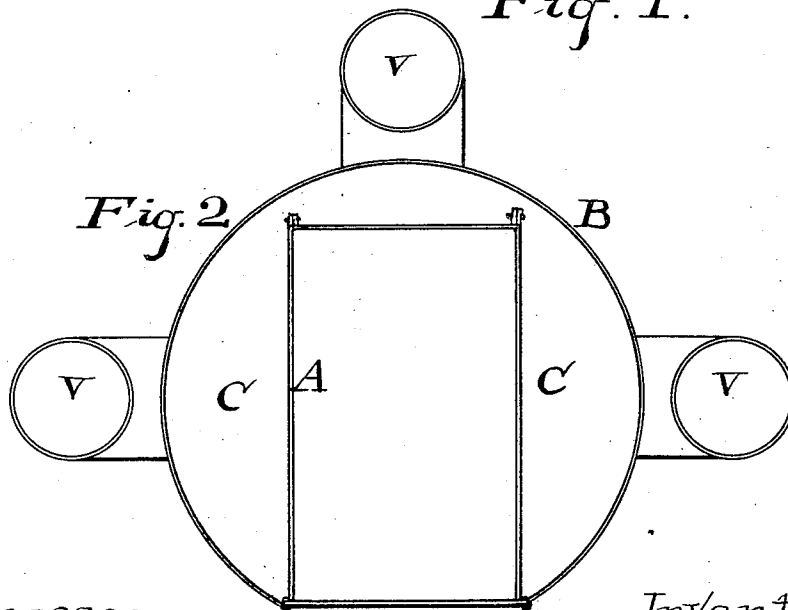


Fig. 2

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3 Sheets—Sheet 2.

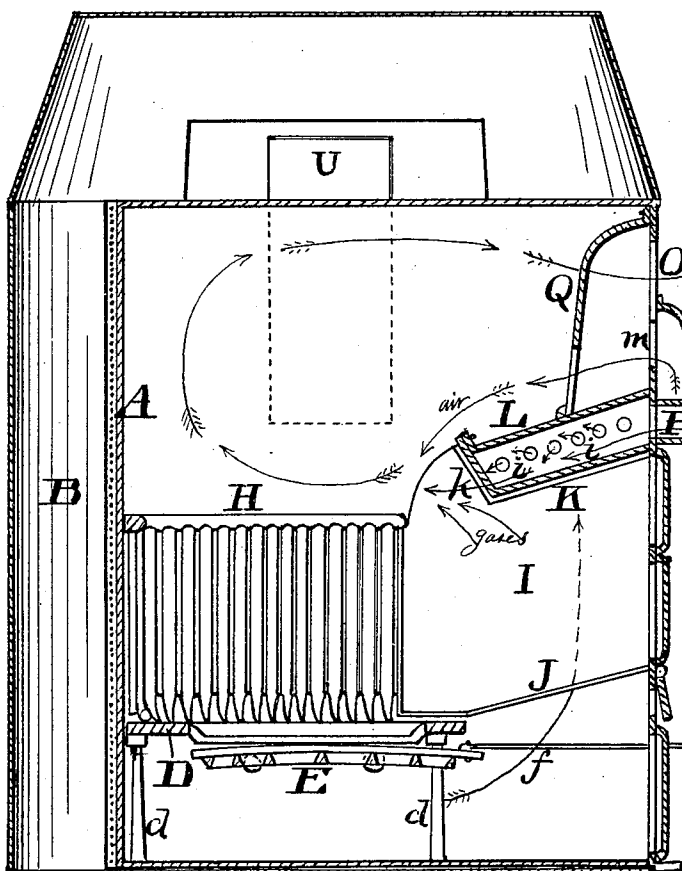


Fig. 3.

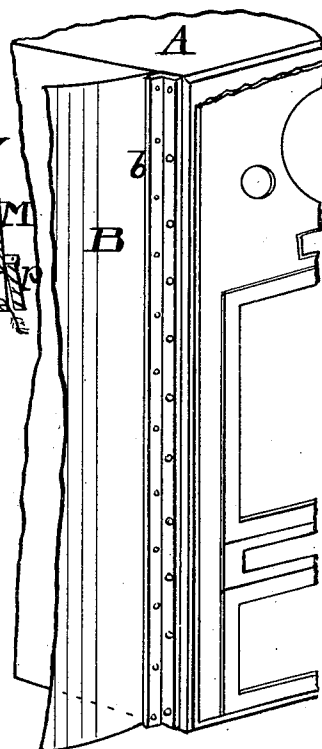


Fig. 4.

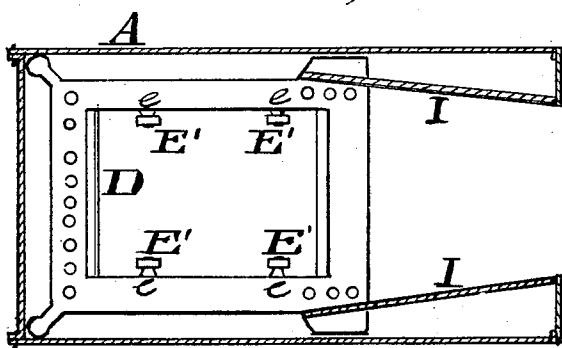


Fig. 5.

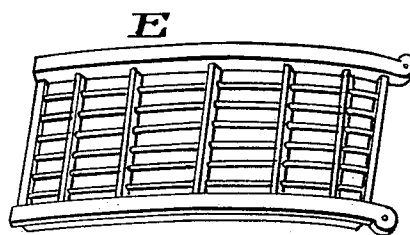


Fig. 6.

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(Application filed July 20, 1901.)

(No Model.)

3 Sheets—Sheet 3.

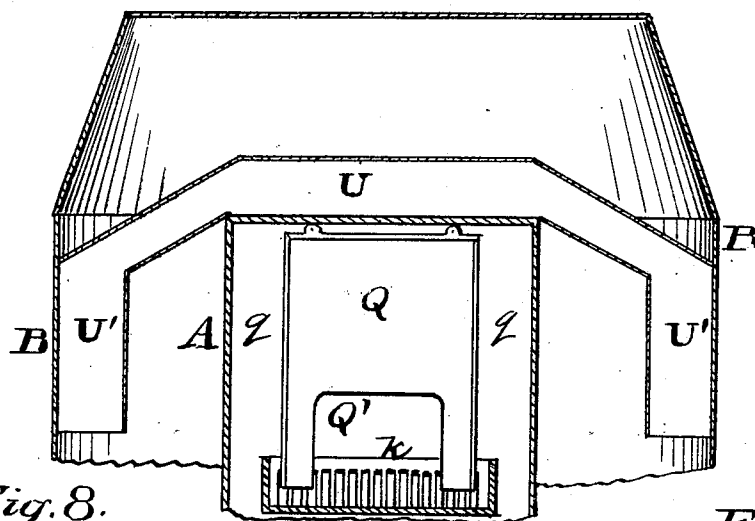


Fig. 8.

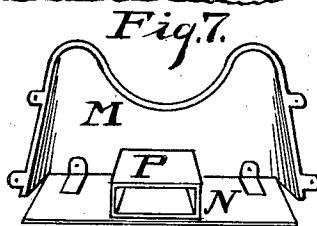


Fig. 7.

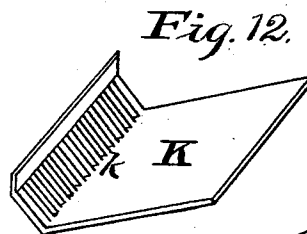


Fig. 12.

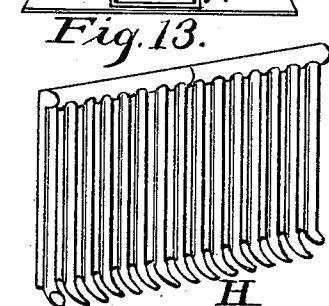
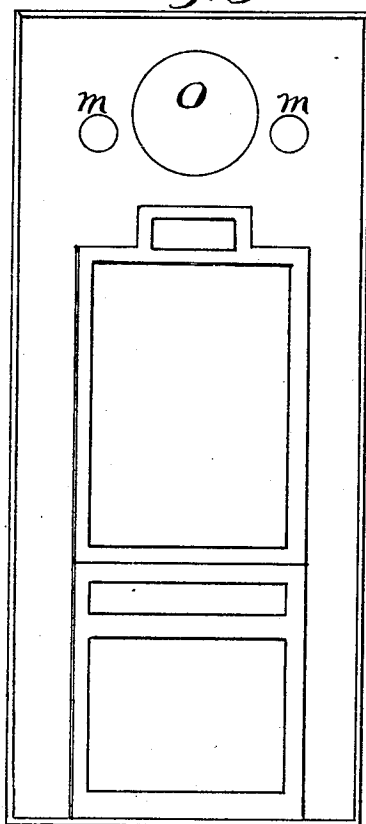


Fig. 10.

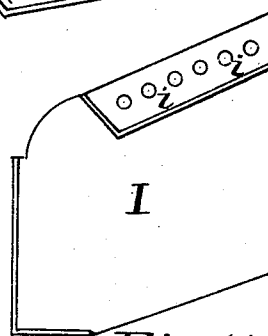


Fig. 11.

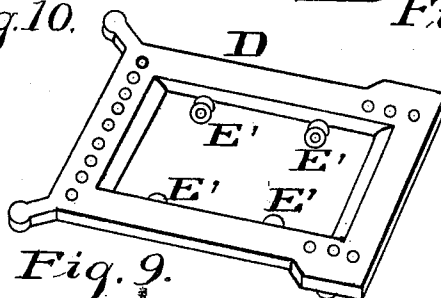


Fig. 9.

Witnesses:

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UNITED STATES PATENT OFFICE.

HORATIO J. NOYES, OF ASHTABULA, OHIO.

HEATING-FURNACE.

SPECIFICATION forming part of Letters Patent No. 700,802, dated May 27, 1902.

Application filed July 20, 1901. Serial No. 69,074. (No model.)

To all whom it may concern:

Be it known that I, HORATIO J. NOYES, a citizen of the United States of America, and a resident of Ashtabula, county of Ashtabula, State of Ohio, have invented certain new and useful Improvements in Heating-Furnaces, of which the following is a specification.

This invention relates to house-heating apparatus; and it consists in the new constructions and adaptations of a hot-air generating and radiating mechanism, substantially as hereinafter described, and pointed out in the claims.

The invention consists in a particularly-constructed sheet-metal box made absolutely air and gas tight and adapted for entirely inclosing a cast-iron grate and fireplace-linings and the draft-controlling mechanism for the generation of heat from the fuel consumed within it in the most economical and uniform manner, the metal box acting as a radiator for heating the air surrounding it in the outer casing, and it is a positive preventive to the escape of either gas, ashes, or dust into the air-chamber and thence into the rooms of the house.

The nature and working characteristics of this new heater will fully appear from the following description when considered in connection with the accompanying drawings, in which—

Sheet 1: Figure 1 is a general perspective view of my new house-heating apparatus. Fig. 2 is a plan view of the bottom plate of the outer casing of the heater. Sheet 2: Fig. 3 is a vertical section of the whole apparatus. Fig. 4 is a side elevation of a portion of the box inclosing the working parts of the apparatus, showing the manner of attaching the outer casing to said box. Fig. 5 is a horizontal section of the box, showing a plan of the grate-frame and its location in the box. Fig. 6 is a detached view of the grate. Sheet 3: Fig. 7 is a vertical section of the upper part of the heater, transverse of Fig. 3, showing a baffle-plate and over-top air-flue. Fig. 8 is a front elevation of the heater front door-frame. Fig. 9 is a detached perspective view of the grate-frame. Fig. 10 is a perspective view of one of the fireplace side linings. Fig. 11 is a detached view of one of the coking-chamber linings. Fig. 12 is a top or covering

plate to the coking-chamber. Fig. 13 is a rear view of a hood covering draft-openings above the doors.

A is a rectangular box, preferably made of sheet metal, the sides and top of which are made from one piece. The back and bottom are flanged and are riveted into said side and top piece and the seam calked to make the joints perfectly air, gas, and dust tight. The front door-frame (seen in Fig. 8) is also secured to the front edges of the box and the seam also made air, gas, and dust tight, thus leaving no openings whatever through the walls of the box within the outer casing.

B represent the outer casing of the heater, composed of galvanized iron, and surrounds and incloses the said box A. The edges of the casing are secured to an angle-bar *b* at the sides of the front door-frame. The foundation of the heater may be placed on the cellar-bottom under the bottom C and under the corners of the box A for elevating the heater sufficiently to provide for air circulation and avoid the dangers of dampness gathering and corroding the metal.

D is a cast-iron frame forming the support for the shaking-grate E, Fig. 6, and the foundation for the fireplace-linings. The said grate-frame is a little narrower than the box A and occupies about two-thirds of the space in the rear end of the box. It is supported on posts or legs *d d* at the corners at a suitable height from the bottom to provide for a suitable ash-pit. On the side bars of said frame are made lugs *e e*, on which are journaled friction-rollers *E' E'*, on which the shaking-grate is supported and rides when shaking. The grate consists of a rectangular frame slightly curved or bent at the middle and has a series of longitudinal bars and a number of cross-bars, forming the fire-surface. The cross-bars at the right and left of the center, respectively, have perpendicular sides toward the ends of the frame and have inwardly-slanting sides toward the middle, the purpose of which is to eject stones, clinkers, or other hard lumps in the fuel when the grate is moved back and forth. Rods *f f*, attached to the front corners of the grate and extending out through the front and connected with the upright hand-levers *G G*, enable the grate to be shaken from the outside.

H H, Figs. 3 and 10, are fireplace-linings supported on the frame D at the sides and back. I I are also linings extending from the sides of the door-openings in the front plate back to and have their ends resting on the said frame D.

J is a plate resting on flanges on the lower edges of the side plates I I and on the frame D, forming a bottom for the coking-chamber in front of the grate and also forming a covering over the forward part of the ash-pit.

K is a plate resting on flanges on the side plates I I in an inwardly-inclined position and which forms a top covering for the coking-chamber. At its inner end said plate K has an upwardly-inclined flange k , having slotted openings. (Seen in Fig. 12.) Over said plate K is placed a plate L, covering the entire space between the side walls of the box A and resting on the top edges of the plates I I. The space between the said top plate L and the plate K forms a shallow chamber over the coking-chamber, as seen in Fig. 3. In the sides of the plates I I, between the two plates K L, are made perforations $i i$ for communicating with the space between the plates I I and the sides of the box A.

O is an opening in the front frame over the door-openings for the attachment of the smoke-pipe S. At each side of said pipe-opening are made smaller openings $m m$.

M is a hood attached to the front door-frame and above the doors, covering said openings $m m$ and forming a chamber outside of the front frame of the box A. The under side of said hood is provided with a trap-door N. (Seen in Fig. 13.) P is a small flue made in the said hood for an outer communication for the chamber between plates K L. Said flue is closed on the outside with small door p .

Q is an inside baffle-plate standing on plate L, having a curved upper part extending to the top of the box A. It is placed a short distance back of the pipe-opening O and is narrower than the box, leaving the required draft-spaces $q q$ at each side.

Q' is also an opening in the lower part of the baffle-plate Q.

T is a check-damper in the smoke-pipe elbow opposite to the opening Q' in said baffle-plate. A chain t is attached to the check-damper, extending up and over a pulley, (not shown,) thence back to and around a pulley t' on a bracket on the heater-front, thence to and attached to the upper fuel-door. This chain may be so adjusted that when the fuel-door is open the check-damper will be closed for applying the full draft while said door is open and again opened when the door is again closed.

Across the top of the box A within the casing is made a flue U, inclining downward at the ends and connected with the short downward side flues U'. U' at the sides of the casing B.

V V are the cold-air pipes, which lead into the lower part of the casing B and may take air from the rooms of the house or from out of doors. W W are the hot-air pipes, attached to the top of the heater in the usual manner. Both of said pipes V and W may terminate in the register-boxes in the rooms above.

The working of this heater is: After a fire has been started fresh fuel is placed in the coking-chamber forward of the grate. Here the fuel is reduced to coke by the heat from the fire on the grate. Then when fresh fuel is required this coke is pushed in onto the grate and another quantity of fuel is placed in the coking-chamber. The gases pass up at k into the combustion-chamber over the live fire in the grate. Gases from beneath the grate also pass up at the sides of the coking-chamber and are drawn into the chamber K L through the perforations $i i$. Air from without is drawn into this chamber through flue P. It then passes on through the slots $k k$ and mingles with the gases in the combustion-chamber. They pass thence into smoke-pipe S. The check-damper T may be opened for regulating the draft of the furnace in the usual manner.

The draft of the heater is regulated by the check-damper T in the usual manner.

Having described my invention, what I claim is—

1. In a house-heating apparatus the combination of a combustion and heat-radiating chamber, consisting of a sheet-metal box A, a grate-frame D in the rear part of said box, a fireplace on said grate-frame, a fuel-receiving and coking chamber forward of said fireplace, a perforated draft-chamber over said coking-chamber, a vertical baffle-plate over said perforated chamber, and a hood on the front beneath the smoke-pipe, and openings in the heater into said hood, all constructed to operate substantially as described.

2. In a house-heating apparatus, a combustion and heat-radiating chamber consisting of a sheet-metal box A, a grate-frame D in the rear part of said box, a fireplace on the grate-frame, a fuel-receiving and coking chamber forward of said fireplace, a perforated draft-chamber over said coking-chamber, a vertical baffle-plate over said perforated chamber, and a hood on the front beneath the smoke-pipe, in combination with the outer casing B the cold-air downdraft-pipes V, connected to lower end of said casing, and the hot-air-conducting pipes W connected to the dome of said casing, constructed to operate substantially as described.

Signed by me at Cleveland, Ohio, this 16th day of July, 1901.

HORATIO J. NOYES.

Witnesses:

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