

BROWN & FRANKEM.

Hot Air Furnace.

No. 52,671.

Patented Feb. 20, 1866.

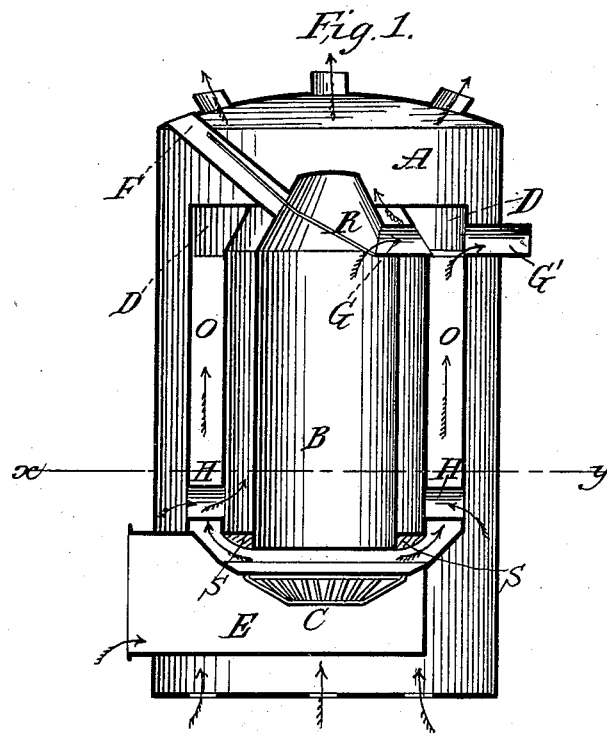
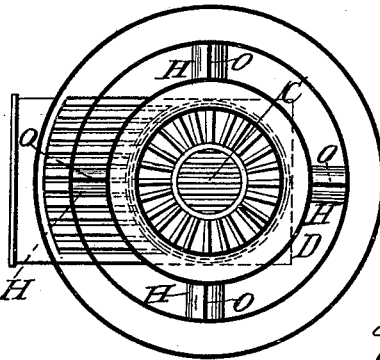


Fig. 2.



Witnesses: H
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UNITED STATES PATENT OFFICE.

LORENZO W. BROWN AND ISAAC L. FRANKEM, OF INDIANAPOLIS, IND.

HOT-AIR FURNACE.

Specification forming part of Letters Patent No. 52,671, dated February 20, 1866.

To all whom it may concern:

Be it known that we, LORENZO W. BROWN and ISAAC L. FRANKEM, of Indianapolis, in the county of Marion and State of Indiana, have invented new and useful Improvements in Warm-Air Furnaces; and we do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, making part of the same, in which—

Figure 1 is a vertical section through the center of the furnace. Fig. 2 is a horizontal section on line *x y*.

Similar letters' of reference indicate corresponding parts in the several figures.

The nature of our invention consists in having a large fuel-reservoir arranged in the interior of a warm-air furnace in such manner as that the reservoir is almost entirely surrounded with fresh air, which preserves it from rapid destruction by the excessive heat; and also in arranging a chamber to receive the heated products of combustion from either the base or top of the fuel-reservoir, as may be desired, said chamber being separated from the reservoir by an air-space, for the purpose above mentioned; and also to increase the heat-radiating surface, and thereby enhance the warming capacity without materially increasing the dimensions of the furnace.

To enable others skilled in the art to make and use our invention, we will proceed to describe its construction and operation.

A is the external case, which, as in other furnaces, may be either metal or brick.

B is the fuel-reservoir, which is supplied through the chute F.

C is the grate; E, the ash-pit, through the door of which the air is admitted to the fire.

G G' is the smoke-pipe. The pipe G connects the fuel-reservoir and the smoke-chamber D near the top, and has a valve or damper over the reservoir end, which may be opened or closed at pleasure by means of rod R.

D is the smoke-chamber. H H H H are pipes that connect the outer air-space with the inner air-space between the fuel-reservoir B and smoke-chamber D. The bottom of the smoke-chamber is formed as shown, so that ashes and soot that may be drawn into the smoke-chamber will fall back into the grate,

and also to form a suitable connection between the grate and smoke-chamber, so that when the fire is burning at the base the products of combustion may readily escape into the smoke-chamber, from which it escapes into the chimney through smoke-pipe G'. The bottom of the air-chamber, between the fuel-reservoir and smoke-chamber, is closed tight and lined with fire-bricks, as shown at *s s*, to protect it from the heat.

O O are partitions set above the air-pipes H, and extend up to the enlargement of the smoke-chamber, and are designed to keep the products of combustion spread around the smoke-chamber until they reach the enlargement at the top, so as to diffuse the heat more evenly. There may be any desired number of pipes H, and they also serve as radiators of heat, warming the air as it passes through them from the outer to the inner air-space.

To light the fire in this furnace, a quantity of shavings, paper, or other light combustible material are placed in the chute F and kindled and pushed into the reservoir and fall upon the grate. Then some wood splinters are added. When fairly burning a small quantity of coal is put in. When this is fully ignited the reservoir may be filled up. When the fire is first lighted the valve over smoke-pipe G is opened to obtain a direct upward draft and warm up the chimney-flue. When this is done, and before the reservoir is filled up, the valve is closed, and the smoke and other products of combustion pass from the fire at the base of the reservoir into the smoke-chamber at the bottom. The reservoir B is designed to hold a supply of fuel for many hours, and which, as it burns away at the base, sinks down by its own gravity to replenish the fire.

Two principal objects are had in view in the construction and arrangement of this furnace, one of which is to surround the fuel-reservoir as nearly as possible with an air-space, to prevent its rapid destruction by excessive heat. The other is to provide, by means of the smoke-chamber and its arrangement, the air-pipes H, and the external surface of the reservoir, as much radiating-surface as practicable in a compact and simple form.

The advantage of our arrangement of the smoke-chamber and air-space between it and

the reservoir over separate pipes to receive the products of combustion at the base is, that a current of fresh air is compelled to enter the pipes H and ascend along and in contact with the external surface of the reservoir, which tends to keep it cool and preserve it, and also that the air is brought more effectively in contact with the heating-surfaces of the reservoir and smoke-chamber.

We do not make any claim upon a base-burning fuel-reservoir, as they are already in use in other stoves; but

What we do claim as new, and desire to secure by Letters Patent, is—

The smoke-chamber D, partitions O, and air-pipes H, when arranged in combination with the reservoir B, grate C, and smoke-pipes G G', substantially in the manner and for the purpose set forth.

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Witnesses:

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