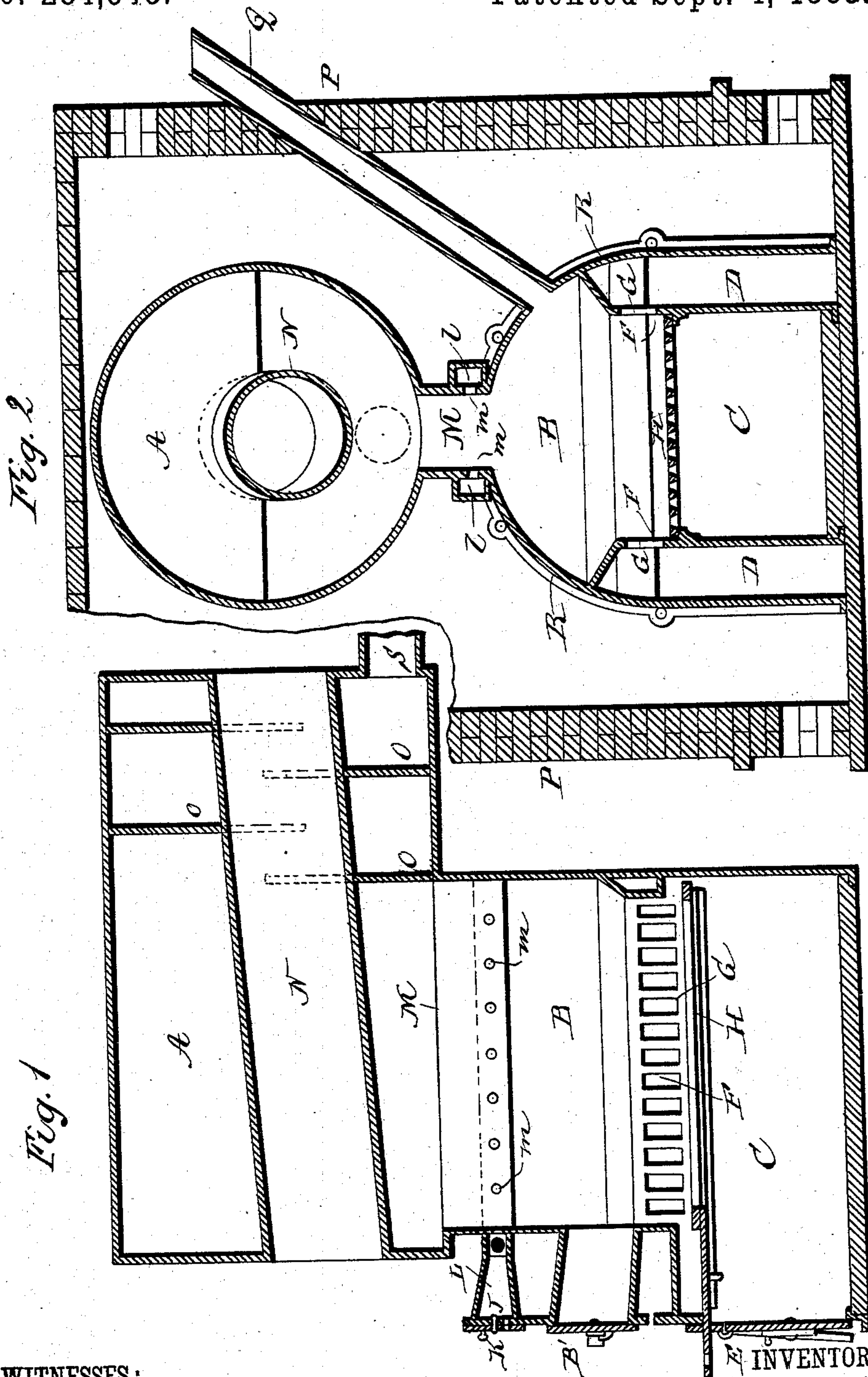


(Model.)

G. W. FAIR.
HEATING FURNACE.

No. 284,545.

Patented Sept. 4, 1883.



WITNESSES:
Fred. G. Dietrich
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UNITED STATES PATENT OFFICE.

GEORGE W. FAIR, OF DAYTON, OHIO, ASSIGNOR OF ONE-HALF TO WILLIAM WALKER, JR., OF SAME PLACE.

HEATING-FURNACE.

SPECIFICATION forming part of Letters Patent No. 284,545, dated September 4, 1883.

Application filed February 21, 1883. (Model.)

To all whom it may concern:

Be it known that I, GEORGE W. FAIR, of Dayton, in the county of Montgomery and State of Ohio, have invented certain new and
5 useful Improvements in Heating-Furnaces; and I do hereby declare that the following is 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
10 same, reference being had to the accompanying drawings, which form a part of this specification, and in which—

Figure 1 is a longitudinal vertical sectional view of my improved furnace, and Fig. 2 is a
15 cross-section of the same.

Similar letters of reference indicate corresponding parts in both the figures.

My invention has relation to heating-furnaces; and it consists in the improved construction, combination, and arrangement of
20 parts of the same, as will hereinafter be more fully described, and particularly pointed out in the claims.

In the accompanying drawings, the letter A
25 indicates the radiator, B the fire-place, and C the ash-pit. On each side of the ash-pit is an opening, D, closed by a hinged door, E E. Through these openings the draft enters the furnace, and may be regulated by opening or closing the doors E more or less. The draft entering through these doors is led through the
30 side grate-bars, F F, into the fire. These side grate-bars are provided with a series of openings, G, through their whole length and stand at right angles to the bottom grate, H, which
35 may be of any desirable construction, and is operated by a bar, I, passing through a slot in the front plate of the furnace. The air passing into the fire from the sides as well as
40 from the bottom through the whole length of the fire causes a perfect and even combustion in the whole length of the fire-place.

Above the door B', through which the fuel is fed and which opens into the fire-place from the front, is an opening, J, covered by a circular adjustable register-plate, K, of the usual
45 construction, leading into a T-shaped tube or funnel, L, which opens into two channels, l, one upon each side of the neck M, formed by the contracting sides and top R of the fire-place, which channels have openings m on

their inner sides leading into the said neck, and conducting the air passing through the tube L into contact with the ascending products of the combustion in the fire-place, where
55 it is mixed with the same and ignited, assisting in consuming the smoke and causing an intense heat in the radiator. By opening the register-plate wider and admitting a larger amount of air, the combustion in the fire-place
60 may be decreased, so that the register-opening may also serve as a regulator for the combustion, and by being contracted in the said opening, immediately above the center of the fire, the smoke is partially consumed, and the hot
65 air and other products of combustion ascending into the radiator are superheated.

The radiator A is cylindrical in shape, and a drum, N, open at both ends, passes longitudinally through it from the front to the rear
70 in a slightly-upward direction, admitting of a portion of the air to be heated passing through it. Inside the radiator, to the rear of opening M, extend a series of semi-annular partitions alternately from the bottom and the top of the
75 radiator, and extend slightly beyond the central plane of the same, serving to guide the products of the combustion in an undulatory course through the radiator, subjecting all points of the same to the heat and retaining
80 the latter in the radiator before passing out in the chimney through the aperture S.

The whole furnace is inclosed in a brick-chamber, P, having openings to admit the air to enter, and to conduct it, after it has been
85 heated by contact with the radiator, through appropriate ducts to the rooms desired to be heated.

A chute or box, Q, leading obliquely from the side of the brick chamber into the fire-
90 place serves to conduct the fuel, and may be filled, allowing the fuel gradually to slide down as it is consumed in the fire.

Having thus described my invention, I claim and desire to secure by Letters Patent of the
95 United States—

1. The radiator A, having drum N open at both ends and passing longitudinally through it, and the semi-annular partitions O, alternately extending from top and bottom, and extending beyond the central horizontal plane
100 of the radiator, substantially as set forth.

2. The combination of the fire-place B, having draft-apertures D, provided with doors E, side grate-bars, F, having apertures G, grate H, front draft-aperture, J, and T-shaped pipe
5 L, having channels *l*, perforated at *m*, and arched sides and top R, contracting to form a neck, M, and chute Q, with the radiator A, substantially as and for the purpose shown and set forth.
- 10 3. The herein - described heating-furnace, consisting of the fire-place B, having arched sides and top R, contracting to form neck M, and having fuel-chute Q, grate H, side grate-

bars, F, having transverse perforations G, and air-ducts D, perforated channels *l*, radiator A, 15 drum N, and semi-annular partitions O, all constructed and combined to operate as and for the purpose shown and set forth.

In testimony that I claim the foregoing as my own I have hereunto affixed my signature in 20 presence of two witnesses.

GEORGE W. FAIR.

Witnesses:

WARREN MUNGER,
GRAFTON C. KENNEDY.