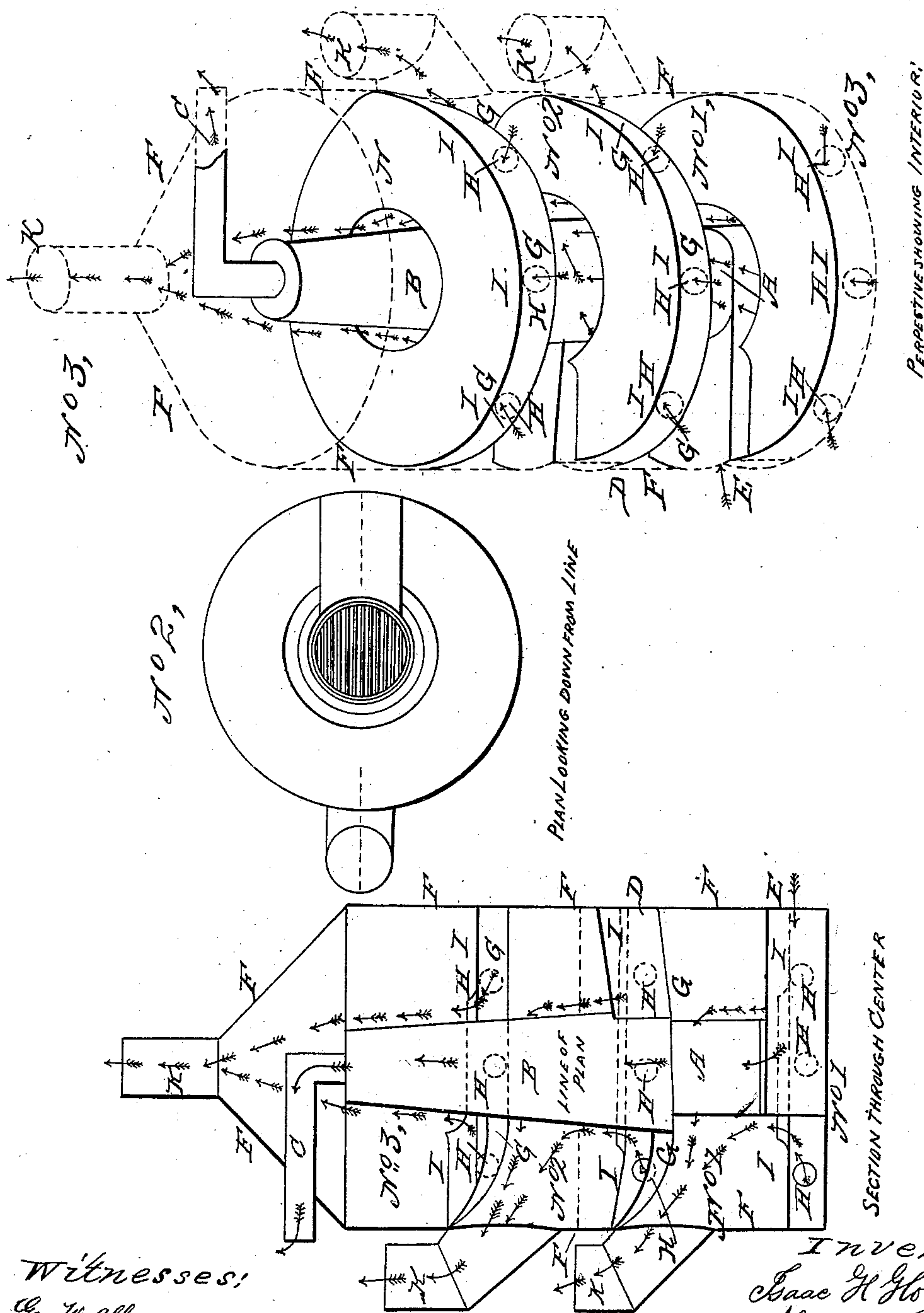


HOBBS, SELLERS & RAND.

Hot Air Furnace.

No. 25,735.

Patented Oct. 11, 1859.



Witnesses:

Geo. W. Allen

J. C. McFarland

Inventor:  
Isaac H. Hobbs  
Abram W. Rand  
George Sellers



# UNITED STATES PATENT OFFICE.

I. H. HOBBS, A. W. RAND, AND GEO. H. SELLERS, OF PHILADELPHIA, PENNSYLVANIA.

## HOT-AIR FURNACE.

Specification of Letters Patent No. 25,735, dated October 11, 1859.

*To all whom it may concern:*

Be it known that we, ISAAC H. HOBBS, ABRAHAM W. RAND and GEORGE H. SELLERS, of Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented an Improvement in the Arrangement of Hot-Air Furnaces; and we do hereby declare that the following is a full and exact description of the construction and operation of the same, reference being had to the annexed drawings, making part of this specification, in which—

Figure 1, is a sectional elevation. Fig. 2, is a plan. Fig. 3, is an elevation in perspective showing the internal arrangement.

Similar letters referring to similar parts on each.

The object of our invention and what we design to accomplish by our improvement is the heating of a larger amount of air with the same heating surface—than has heretofore been done and to make the furnace better adapted to the distributing the hot air to different rooms of the building.

To accomplish the end proposed we divide the air chamber into separate compartments, as will be seen by reference to the drawings, in which—

A is the fire pot.

B, is the radiator; C, pipe for the escape of gas into the chimney; D, charging door.

E is the ash door. The whole surrounded by an outer casing F, F, F. G, G, are diaphragms separating or dividing the air chambers into several compartments each quite distinct from the other. Air is admitted into these chambers through the holes H, H, H. Near these holes we place deflecting diaphragms I, I, I, to cause the air to pass in close contact, with the heated surface of the radiator, or furnace—before it escapes through the hot air pipes K, K, K, into the building.

Its operation is as follows: Cold air being admitted through the openings H, H, H, becomes heated by contact with and radiation from the heating surface—into each separate compartment as in No. 1, 2, and 3, and then passes at once to the rooms, with the heat of that particular chamber. Now it must be evident that the heat is different in the different chambers. Hotter for instance in No. 1 than in No. 3. Hence if the air was admitted only in the bottom of the air chamber as is usual and was then allowed to pass up and escape at the top of the air

chamber, it would receive a certain amount of heat from the hottest surface and passing afterward over surface not so highly heated would give up a portion of its heat to those surfaces, and would escape at the mean temperature of the radiating surface. Now by experiments which we have tried we have established this fact, viz, that if the opening at the top of the air chamber be made as large in area as the sum of all the openings K, K, K, and the opening at the bottom be as large as the sum of all the openings H, H, H, the amount of air heated is not as great as when we divide the hot air chamber into compartments and admit air into and draw it off from each separately though the sum of the receiving and discharging openings be the same in both instances.

To prove the correctness of our premises we have only to suppose that the chamber, B, be so extended as to be too far removed from the fire to receive any heat at its farthest end—then the air heated by contact, with the hot fire pot would become quite cool in its passage over the cooler part of the chamber B, and would be inefficient for the purpose intended—while in the present arrangement, the air when once heated in the separate chambers, could be used at that degree of heat in the most economical manner. Now it must be evident to every ingenious mechanic that our improvement is applicable to all existing forms of hot air furnaces and is not dependent on any particular form of radiating surface, but consists in theory of the subdivision of the air chamber into separate compartments, and admitting cold air into and drawing off the hot air from each as has been explained. Now one striking feature of this improvement is its convenience in distributing the heated air to distant rooms.

It is well known that much difficulty is experienced on this account in ordinary furnaces, for the openings at the top of the air chamber communicating with the rooms above carry off the bulk of the air heated and prevent a sufficient quantity passing through the long horizontal pipes to the more distant rooms. Now in our arrangement this difficulty is entirely overcome. The upper chamber can be used for the rooms above the furnace, while hot air pipes from the lower ones rising by a gentle inclination to the flues conveying air to the

more distant rooms, will deliver the whole of the air heated to those chambers without interference with the other pipes.

5 Having now fully described our invention and explained its many advantages, we do not wish to limit our claim to the special form described, but

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

10 1. The general arrangement of the subdivided air chamber in connection with the separate receiving and discharging openings

substantially in the manner and for the purpose specified.

2. We also claim the deflecting diaphragms in combination with the above described arrangement, in the manner substantially and for the purpose set forth.

ISAAC H. HOBBS.

ABM. W. RAND.

GEORGE H. SELLERS.

Witnesses:

GEO. W. ALLEN,

E. McFARLAND.