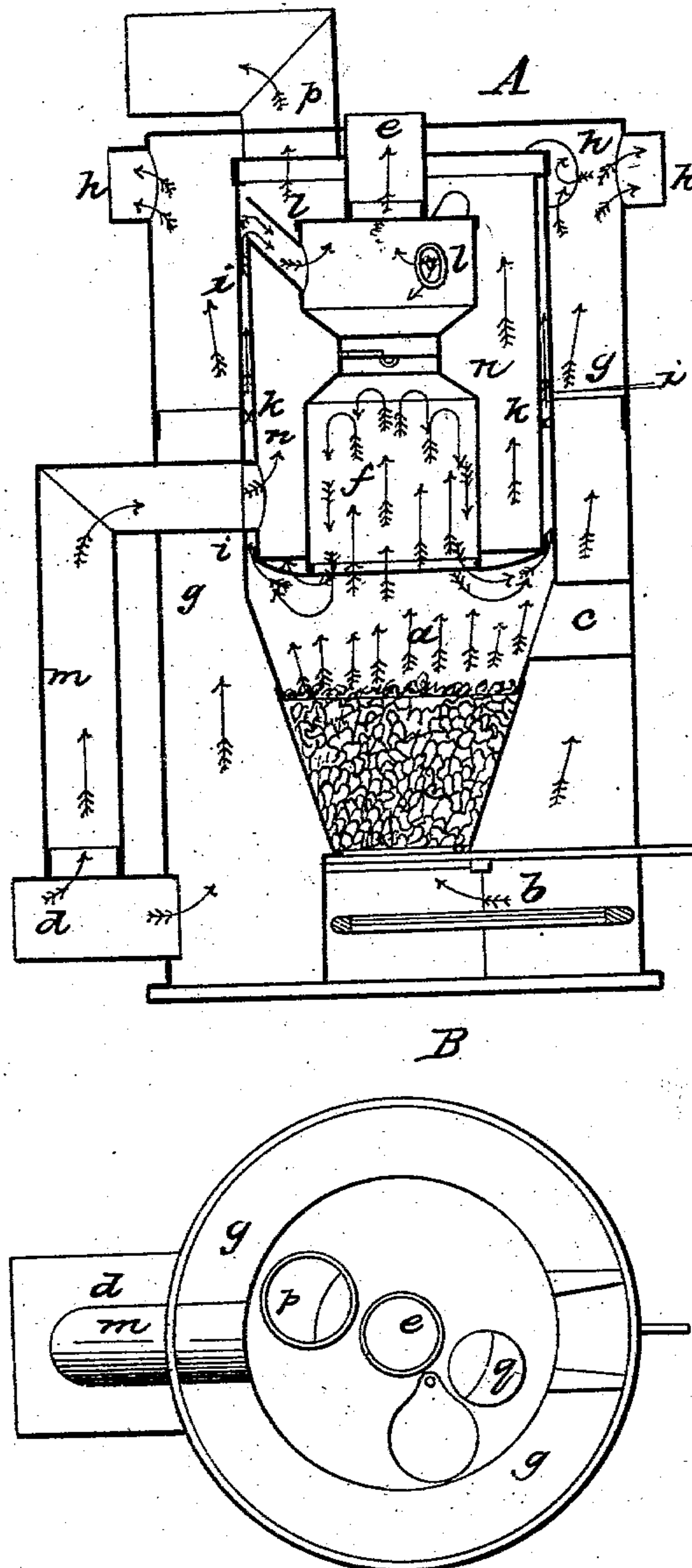


A. KOHLER.  
Hot Air Furnace.

No. 69,820.

Patented Oct. 15, 1867.



Witnesses  
J. B. Kidder  
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Inventor  
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atty



# United States Patent Office.

AMBROSE KOHLER, OF BOSTON, MASSACHUSETTS.

*Letters Patent No. 69,820, dated October 15, 1867.*

## HOT-AIR FURNACE.

The Schedule referred to in these Letters Patent and making part of the same.

### TO ALL WHOM IT MAY CONCERN:

Be it known that I, AMBROSE KOHLER, of Boston, in the county of Suffolk, and State of Massachusetts, have invented an Improvement in Hot-Air Furnaces; and I do hereby declare that the following, taken in connection with the drawings which accompany and form part of this specification, is a description of my invention sufficient to enable those skilled in the art to practise it.

The object of my invention is to increase within the practical limits generally occupied by a hot-air furnace the heat-accumulating and radiating surface, or the number of heat-accumulating and radiating surfaces exposed to the direct action of the heat from the fire-pot, and in such manner that the whole may be made available for heating the air in a common distributing-chamber, or that part of the heat may be drawn direct from an inner chamber, as circumstances may render desirable.

In my construction I arrange within the main hot-air chamber, and between the fire-pot cylinder and the walls of said main chamber, auxiliary heat-absorbing and heat-radiating surfaces for receiving and imparting heat, and for forming an auxiliary hot-air chamber, which may be used in common with the main chamber or as an independent reservoir and communicator of heat. And my invention consists in combining with this construction a series of flue pipes leading downwards and inwards from the outer flame-chamber into a central flame-chamber leading into the main centre flue, (such centre chamber being provided with a damper by which it can be made common with the main flame-chamber directly over the fire-pot,) this arrangement effecting an equable distribution of heat over the heat-absorbing and radiating surfaces.

The drawings represent a furnace embodying the invention, A showing the same in central vertical section through the furnace opening and the cold-air box. B, a plan of the furnace, the upper or cap-plate being removed. *a* denotes the fire-pot or combustion-chamber; *b*, the ash-pit; *c*, the furnace or fire-pot door; *d*, the cold-air box; *e*, the main flue. Above the fire-pot is a chamber or cylinder, *f*, through which the flame and other volatile products of combustion pass directly to the main flue *e*, the outer surface of this cylinder composing the heat-radiating surface of the common furnace, the cold air being generally received from the cold-air box into the main chamber *g*, heated by impingement upon the outer surface of the cylinder *f*, and thence distributed by the pipes *h*.

In the present construction I expand the top of the fire-pot, mount upon it a cylinder, *i*, and place between this and the cylinder *f* a cylinder, *k*, as seen at A, the fire-pot or chamber opening around its upper surface into the space *x* between the two cylinders *i* & *k*, this space thereby constituting a thin flame-chamber, *x*, for receiving the volatile products of combustion, which, passing through it, and heating its opposite surfaces, escape at its top through flue pipes *l* into the main flue *e*. While cold air is supplied to the air-heating chamber *g* through the cold-air box *d*, a pipe, *m*, leading from this box, supplies the inner air-heating chamber *n*, the outer surface of *f*, the inner surface of *k*, and the outer surface of *i*, thus constituting three direct air-heating or heat-radiating surfaces, the opposite surface of each being heated by the direct impingement of flame from the fire-pot. From the respective outer and inner hot-air chambers *g* and *n* the air is distributed to the various rooms or localities to be heated by conducting pipes *h* and *p*, or the heat may all emerge from the main chamber *g* by establishing a direct communication between the two chambers through a valve, *q*, a damper being in such case placed in the pipe *p*, and being closed, or such pipe being dispensed with. It is often very desirable, however, while heating all or many of the various apartments of a house, to be able at times to concentrate most of the heat into one room, as, for instance, in the main living-room of the house, and for this purpose I employ the pipe *p* leading direct from the chamber *n* most immediately heated from the fire-pot *f*.

When the fire is to be kindled, a damper, *r*, controlling the direct connection between the combustion-chamber and main flue is opened, and the smoke, flame, and other products of combustion will then pass directly off through the main flue. When the fire is sufficiently kindled this damper is closed, as seen at A, and the flame, gases, &c., will then pass around the heat-absorbing surfaces, as before explained, and as denoted by the arrows in red, the arrows in blue denoting the course of the cold air into and the hot air from the furnace. It will be observed that the flame-chamber *x* opens at bottom directly into the fire-pot, and that the flue pipes *l* also slant downwards and open into the flue-chamber directly over the fire-pot. This arrangement keeps the furnace free from accumulations of carbon deposits, as all such drop directly into the combustion-chamber, as will be readily understood.

I claim, in combination with the flame-chambers *f* and *x*, and the hot-air chambers *g* and *n*, the arrangement of the series of flues *l* running from the chamber *x* into a flue-chamber directly under the main flue *e* and over the flame-chamber *f*, substantially as shown and described.

AMBROSE KOHLER.

Witnesses: