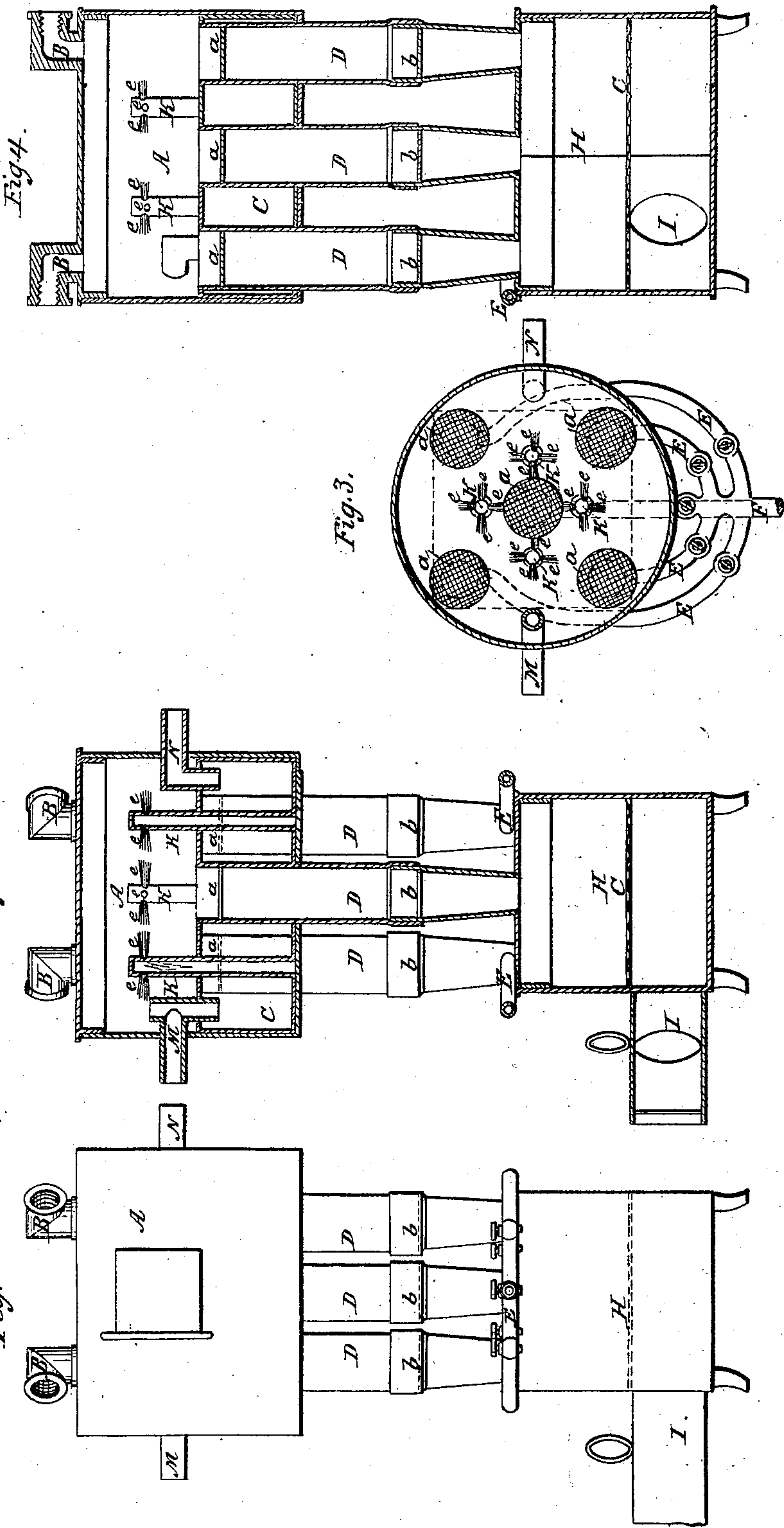


C. H. JOHNSON.

Gas Stove.

No. 14,360.

Patented March -4, 1856.





# UNITED STATES PATENT OFFICE.

CHS. H. JOHNSON, OF BOSTON, MASSACHUSETTS.

## APPARATUS FOR HEATING BUILDINGS BY THE COMBINATION OF AND BURNING GAS, AIR, AND STEAM.

Specification of Letters Patent No. 14,360, dated March 4, 1856.

*To all whom it may concern:*

Be it known that I, CHARLES H. JOHNSON, of Boston, in the county of Suffolk and State of Massachusetts, have invented a  
5 new and useful or improved apparatus for combining and burning gas, air, and steam for heating buildings or for other purposes to which it may be applicable; and I do hereby declare that the same is fully de-  
10 scribed and represented in the following specification and accompanying drawings, of which—

Figure 1, is a side elevation of the said apparatus, heater, gas stove, or furnace. Fig.  
15 2, a vertical and central section of the same. Fig. 3, a horizontal section taken through its chamber of combustion. Fig. 4, a vertical section taken diagonally or through three of its air and gas burners.

20 In these drawings, A, is a chamber of combustion having one or more pipes B, B, B leading out of the upper part thereof. Below this chamber and forming the bottom of it is a steam generator or boiler, C,  
25 through which a series of tubular air and gas burners D, D, D, extend and open directly into the chamber of combustion. Each of the said air and gas burners has a perforated metallic or wire gauze dia-  
30 phragm, *a*, extended across it a short distance below the top of the boiler. There is also within each tube another perforated diaphragm *b*, the same, being arranged be-  
35 low the diaphragm, *a*, and being intended when in use to have its upper surface covered with a layer of loose pumice stone, asbestos or other proper straining material, the object of the same being to mix the air and gas, as well as to strain such before  
40 they impinge against the diaphragm *a*.

Into the lower part of each tube or burner D, a gas pipe, E, is made to enter, such pipe having a stop cock in it and being a branch from a main conduit, F. The  
45 lower end of each burner tube D, opens into a closed chamber, H, which is divided horizontally by a diaphragm or partition, *c*, perforated with numerous holes or made of wire gauze, or woven wire. Into the lower  
50 part of said chamber and below the perforated partition thereof, an air conduit or pipe, I, is led or made to open, it being intended in most cases, that such air conduit shall not receive its air from the room in

which the apparatus may be but from the 55 atmosphere outside of said room or building in which such apparatus may be situated. As the quantity of air consumed by the apparatus, under ordinary circumstances, when it is in use, is too great to be  
60 taken from the room in which the apparatus may be placed without serious injury or inconvenience to persons who may be required to remain therein. I prefer to employ the external atmosphere in the manner as stated. 65  
The chamber, H, with its diaphragm, *c*, I term the air divider, its purpose being to separate into minute columns or streams, the air which flows into the gas receiving chambers or tubes D, D. By such a division of  
70 the air, the gas will be better mixed or commingled with it before reaching the mixers or strainers than it would were it allowed to flow in a solid column by the mouth of the gas pipe. Besides this, the air divider 75  
when applied to a series of air and gas burners, so diffuses the air as to prevent any one of them from receiving more than its share of it, the same serving, also to maintain steadiness of flame of the burner. 80

From the top of the boiler, a series of steam jet tubes K, K, K, extend upward into the chamber of combustion, each tube being arranged between two adjacent burners. These tubes are closed at their upper  
85 ends and are pierced near the same with jet holes, *e*, *e*, *e*, so arranged as to be capable of discharging steam horizontally into the air, and gas flame, so as to promote combustion and increase the heat within the cham-  
90 ber, A, as well as to aid in the discharge of such heat through the pipes leading therefrom. In order to supply the boiler with water, as well as to discharge its surplus steam, any well known means may be  
95 adopted. In Fig. 3, pipes for such purpose are shown at M, and N.

An apparatus constructed in the above described manner may be employed for heating either a single room or several apart- 100  
ments; when used for heating a single room, heat may be radiated into the same from the external surface of the chamber of combustion or from that of a radiator suitably formed and connected therewith. 105

I do not claim combining a steam generator with a gas burner and so that steam or vapor may be produced by the heat of the



burner and used to promote combustion by being introduced into the flame of said burner—but

I claim—

5 1. As my invention or improvement the above described combination and arrangement of the steam generator, C, and its discharge pipes K, K, the gas and air disseminators, or burners D, D, D, and the heat  
10 generating chamber, A, whereby air and gas may be commingled and burned so as to produce steam, and such steam mixed therewith and decomposed so as to promote combustion in manner and for the purpose of  
15 heating as specified.

2. I am aware that a single air and gas burner has been provided with a perforated diaphragm arranged below that on which  
20 the gas is burned, and in the gas receiving chamber, the same being for the purpose of commingling the currents of air and gas

before they might reach the perforated diaphragm on which they were enflamed, therefore I do not claim such, but, what I do claim as my improvement is the above described combination and arrangement of an  
25 air divider, (a closed box, H, having a perforated diaphragm, c, extending across it and receiving air from a pipe as described) with one or more gas receiving chambers  
30 D, D, D and the air and gas mixers *b b b* of the burner diaphragms *a, a, a*, of the same as described, such being for the purpose or purposes as hereinbefore specified.

In testimony whereof I have hereunto set  
35 my signature this twenty fifth day of January A. D. 1856.

CHARLES H. JOHNSON.

Witnesses:

R. H. EDDY,  
F. P. HALE, Jr.