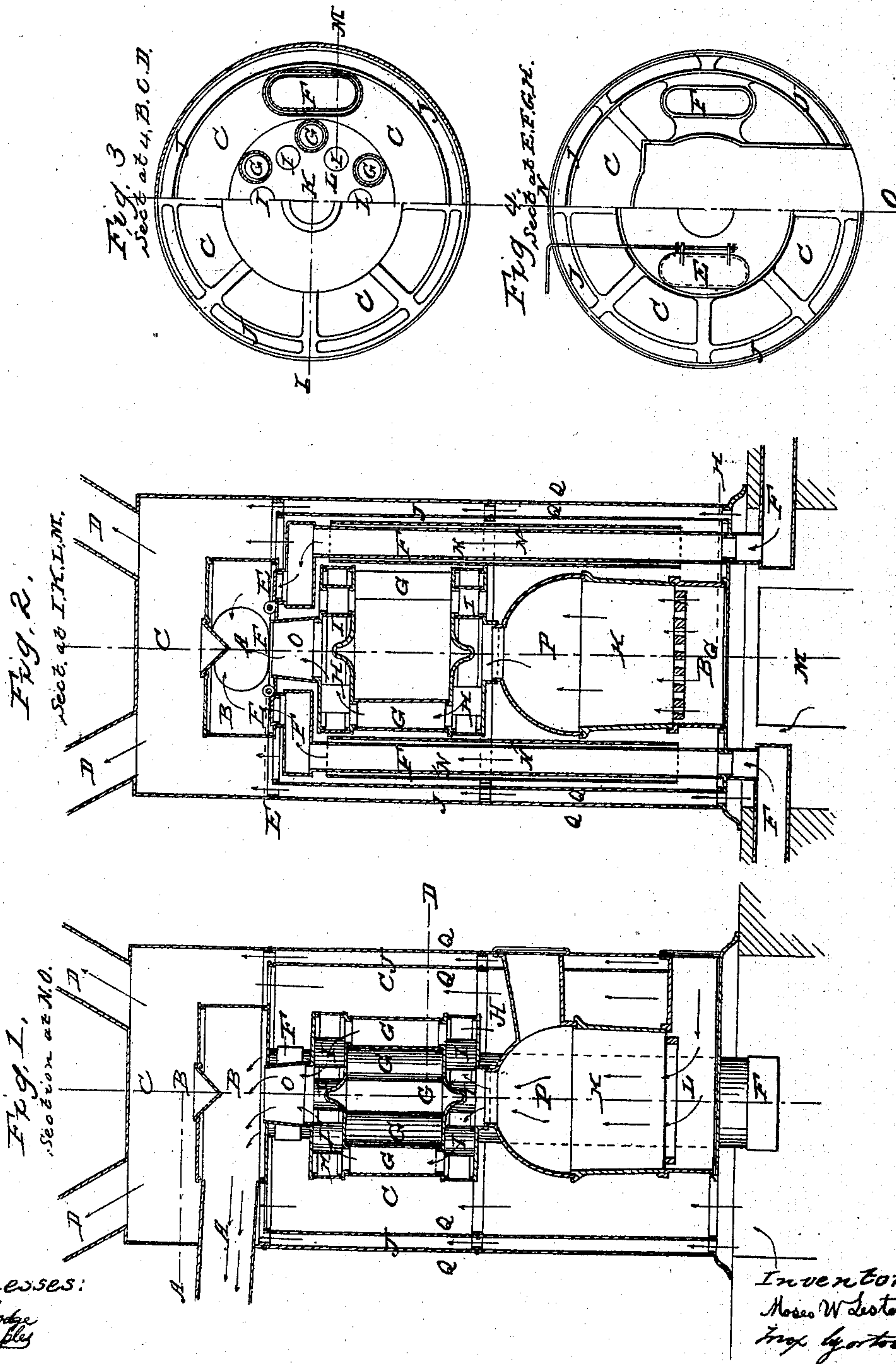


LESTER & HJOSTBERG.

Apparatus for Heating and Ventilating Buildings.

No. 26,686.

Patented Jan'y 3, 1860.



Witnesses:
Sam Dodge
Chas Myles

Inventor:
Moses W Lester
Eng Hjostberg

UNITED STATES PATENT OFFICE.

MOSES W. LESTER AND MAX HJORTSBERG, OF CHICAGO, ILLINOIS.

APPARATUS FOR HEATING AND VENTILATING BUILDINGS.

Specification of Letters Patent No. 26,686, dated January 3, 1860.

To all whom it may concern:

Be it known that we, MOSES W. LESTER and MAX HJORTSBERG, both of the city of Chicago, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Air-Heating Devices for Buildings; and we do hereby declare the following to be a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, and making a part of this specification, in which—

Figures 1, and, 2, are vertical sections at right angles with each other, and Figs. 3 and 4, are horizontal sections.

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

Our invention relates solely to an improvement in an air heating and ventilating device (for which Chas. B. Sawyer obtained Letters-Patent for an improvement on such device originally patented by John Sawyer) and in which a ventilating chamber, hot air chamber, hot air flue and ventilating flue are arranged and combined in a peculiar manner for effecting a desired purpose.

To enable others skilled in the art to construct and fully understand our invention we will proceed to describe our improvement, and substantially set forth the advantages gained thereby over that of Chas. B. Sawyer and John Sawyer.

(C) represents an air heating chamber extending the whole height of the apparatus within which is placed the fire pot (K) with its dome (P).

(L) is the ash pit.

(B) is the ventilating chamber described by Chas. B. Sawyer.

(A) is the smoke pipe and (D) the hot air pipes leading to the several apartments to be heated.

Above the dome and below the ventilating chamber (B) are the radiating drums (H H) connected by the pipes (G G) through which, and through the pipe (O) the smoke and heat from combustion pass into the smoke flue (A) as indicated by the red arrows.

(F F) are the ventilating flues leading from the several apartments, entering below, and passing through the air heating chamber (C) and opening into the ventilating chamber (B) by means of valves (E E).

The ventilating flues (F F) are within the air heating chamber inclosed within the

pipes (N N) open at both ends thus allowing free passage of air between the two.

Within the radiating drums (H H) are placed the pipes (I, I) open at both ends thus forming passages through which the air immediately surrounding the dome (P) and between the radiating pipes (G G) may escape into the upper portion of the hot air chamber (C), their position relative to radiating pipes (G G) being shown in Fig. 3.

Between the outside casings (Q Q) are the spaces or openings (J J) through which the heat that may radiate through the inner casing (Q) is conducted into the upper part of hot air chamber (C). The blue arrows indicate direction of currents of ventilation, the black arrows show the ascending currents of heated air.

(M) is the cold air box leading out of doors and through which a constant supply of fresh air is obtained.

By comparing the above described arrangement with that patented by John and Chas. B. Sawyer its advantages will be clearly perceived. Referring to Chas. B. Sawyer's patent it will be seen that the ventilating chamber (H) occupies the whole upper portion of the apparatus whereby much heat as well as room is lost, the partition between the hot air chamber (F) and the ventilating chamber (G) being single much heat radiates through the same in chamber (G) and is lost by escaping through damper (F). The chamber (H) being also the receptacle for smoke and heat from combustion and placed immediately above the hot air chamber (F) becomes very hot and radiates its heat freely in all directions from its top and sides, which heat is thus lost to the hot air flues (I, I) which are taken out below. The ventilating flues (J) being introduced into the cylindrical inclosure or ventilating chamber (G) above the fire, their action is much injured and sometimes entirely destroyed (when the furnace is highly heated) by a current of hot air forcing its way up through the flues into the rooms, and the very object for which the improvement was designed is thus perverted. Much heat is also lost by radiation through the walls of the air heating chamber (A), (see drawing accompanying Sawyer's patent.) Referring again to the accompanying drawings it will be found that by the arrangement therein shown all these defects are entirely obviated. By reducing the size of the ventilating chamber

(B) making it only sufficiently large to receive the pipe (O) and ventilating flues (F F) and surrounding it by the hot air chamber (C) much is gained in the capacity 5 of the latter, and the heat radiating from chamber (B), instead of being lost is collected in chamber (C).

The tendency of caloric being to rise all the heat created by the furnace accumulates 10 at the top of chamber (C) and by taking from thence the pipes (D D) conducting the heat to the different apartments, the greatest effect is obtained.

The heat which in Sawyer's device is lost 15 by radiation through the walls of the air heating chamber is here saved and carried up into the upper part of chamber (C) through the spaces or opening (J J), and the outside of the furnace while in operation is 20 kept perfectly cool.

The ventilating flues (F F) being introduced into the apparatus far below the fire, no heat can by any possibility be forced through them into the apartments from 25 which they lead, the velocity of the upward current within them is much increased thus securing a more thorough and reliable ventilation—by inclosing them during their passage through the furnace within the outer 30 casings (N N) leaving a space between the casings and the flues, the heat which would otherwise radiate through into the flues is saved and carried to the top of chamber (C) by the upward current within the casing 35 (N). In Sawyer's device the current of air striking against the flat underside of the

lower radiating drum and finding no direct means of escape is retarded in its progress and by remaining long in contact with the highly heated surface of the dome (P) be- 40 comes desiccated and unfit for use. This is also the case with the air inclosed between the upper and lower radiating drums and pipes (G G). By making the openings (I I) through both the drums an easy and 45 direct passage is established for the air from below which thus retains its purity. The heating power of the furnace is also thereby greatly increased.

We do not claim the ventilating chamber 50 (B) the hot air chamber (C) hot air pipes (D D), &c. for these have been previously used, nor do we claim either of the parts herein described separately; but

Having thus described our invention what 55 we claim as our invention and desire to secure by Letters Patent, is—

The arrangement of the ventilating pipes F, extending down to the bottom of the furnace, drum B, and chimney flue A, in 60 combination with a furnace which is constructed with a central fire box K, P, L, radiating drum H, H, G, G, I, I, O, and air circulating and heating chamber extending up beyond the ventilating drum; in the man- 65 ner and for the purposes herein described.

MOSES W. LESTER.
MAX HJORTSBERG.

Witnesses:

LEWIS DODGE,
O. B. MAPLEY.