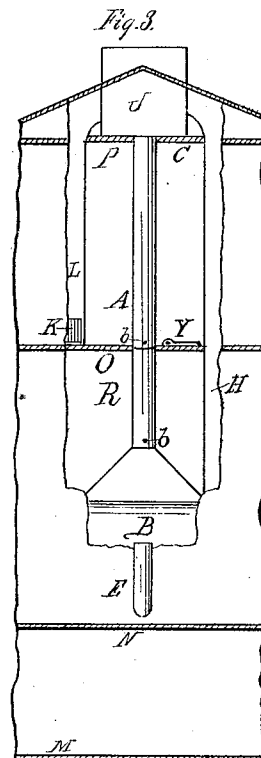
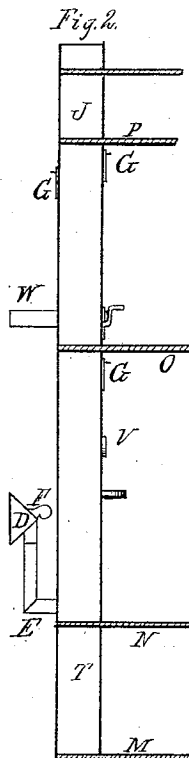
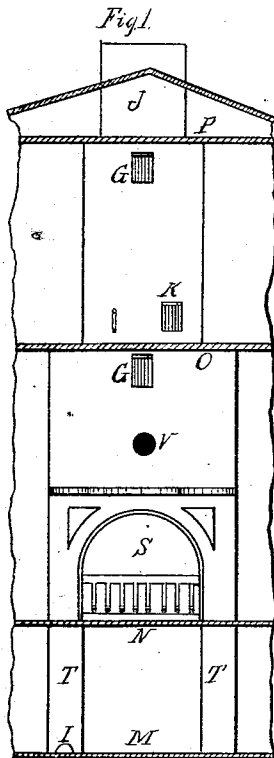


L. B. SILVER.

Combined Chimney and Ventilator.

No. 159,285.

Patented Feb. 2, 1875.



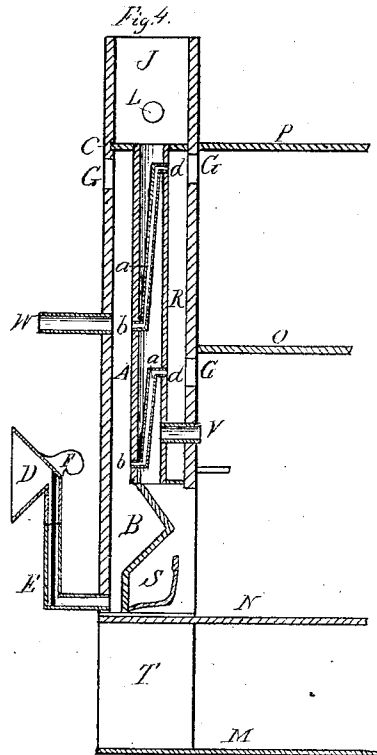
Witnesses;

Jas. F. Duhamel.
 Thomas. Byrne.

Inventor;

L. B. Silver
 Per H. A. Affol.
 Attorney.

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Witnesses;

*Jas. F. Duhamel.
 Thomas. Byrne.*

Inventor;

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 Per
 H. S. Abbott.
 Attorney.*

UNITED STATES PATENT OFFICE.

LOVERN B. SILVER, OF CLEVELAND, OHIO.

IMPROVEMENT IN COMBINED CHIMNEYS AND VENTILATORS.

Specification forming part of Letters Patent No. **159,285**, dated February 2, 1875; application filed December 14, 1874.

To all whom it may concern:

Be it known that I, LOVERN B. SILVER, of Cleveland, county of Cuyahoga and State of Ohio, have invented certain new and useful improvements in apparatus for securing and utilizing heat from chimneys and smoke-pipes and ventilators combined, of which the following is a specification:

The object of my invention is to utilize the heat from the back of a grate, and the heat that would otherwise pass out at the top of the chimney, and also to ventilate the cellar and room; and the nature of my invention consists in the construction and arrangement of parts, as will be hereinafter more fully set forth.

In order to enable others skilled in the art to which my invention appertains to make and use the same, I will now proceed to describe its construction and operation, referring to the annexed drawings, which form a part of this specification, and in which—

Figure 1 is a front view of the main flue embodying my invention. Fig. 2 is a side view of the same. Fig. 3 is a rear elevation thereof with the rear plate removed, and Fig. 4 is a vertical section through one section of the smoke-pipe.

R represents the main flue, which is made of zinc or other suitable material that is a good non-conductor of heat. The lower end of the flue R is enlarged to surround the grate S, and form an air-chamber, B, back of the grate, the flue being supported upon pillars T from the cellar-floor M. N is the floor of the first story, where the grate S is located. O is the floor of the second story, and P of the garret.

It is, of course, understood that the flue R may run up as many stories as there are in the building.

A is the smoke-pipe, which conducts the smoke from the grate S, or from a stove, and may be made of sewer-pipe, tile, iron, or any good conductor of heat. The smoke-pipe extends from the back of the grate to a partition, C, in the upper end of the main flue R.

When a stove is to be used instead of the grate, the stove-pipe (shown at V) will be inserted in the smoke-pipe A as low down as convenient, thereby heating the chamber B substantially the same as from the grate, with

the exception that the heat from the back of the grate is not obtained. The air-chamber B extends up the entire length of the smoke-pipe A, and the air therein is heated by radiation from or through the back of the grate and the smoke-pipe.

E is the cold-air pipe, extending from the outside of the building to the lower part of the chamber B. On the outer end of the cold-air pipe E is pivoted a hood, D, held in proper position by means of a vane, F, attached thereto, so as to receive a current of cold air from outdoors. The air being conducted from the hood D through the pipe E to the hot-air chamber B, it is there heated, and admitted into any room or rooms by means of ordinary registers G. Within the main flue R is a ventilating-flue, H, into which air enters through an opening, I, at the foot of one of the posts T, and which air is carried into the brick flue J and out with the smoke, thus taking impure air from the cellar. The brick flue J rests on the garret-floor P, the smoke-pipe A entering its lower end through the partition C, and the upper end of the main flue R contracted to surround the same.

For the purpose of taking impure air from the upper rooms or chambers openings K are made to enter another ventilating-flue, L, also within the main flue R, and the impure air passes into the brick flue J, to be carried off with the smoke, as through the cellar-ventilator.

The smoke-pipe A is made in sections, corresponding with the number of stories in the building, and each section has a small interior pipe, *a*, which opens through the smoke-pipe at or near both ends of the section, *b* representing the lower, and *d* the upper, opening.

Cold air is admitted through the opening *b* into the pipe *a* of the lower section of the smoke-pipe at the time and about the same locality the outdoor air is admitted through the pipe E into the chamber B, when it passes through the said air-tube *a*, and passes out at the opening *d*, and meets and unites with the warm air at the register G, when both heated currents pass through said register into the room.

W is a cold-air pipe for the purpose of admitting air from outdoors into the upper part

of the hot-air chamber B, and into the hot-air tube *a* inside of the upper section of the smoke-pipe A, just above a valve, Y, (shown in Fig. 3,) when said valve or register is closed, so as to supply the upper room or rooms with heat that might radiate both from the outside of the upper section of the smoke-pipe and through the air-tube within said section.

The valve or register Y is to be kept closed when the heat radiated from behind the grate and around the smoke-pipe is desired in the room on the first floor, or the room containing the grate or stove; and it is to be thrown open when said heat is desired most in the room or rooms above the one containing the grate or stove.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

The combination, with a grate or stove, of the flue R, smoke-pipe A, cold-air pipes E W, valve Y, and registers G, all constructed substantially as and for the purposes herein set forth.

In testimony that I claim the foregoing as my invention I hereunto affix my signature this 23d day of November, 1874.

LOVERN B. SILVER.

Witnesses:

TRUMAN D. PECK,
GEORGE W. THOMPSON.